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INTRODUCTION

We believe it will be well worth your time to complete this Organic R&D-Product Development, Open Innovation, Intellectual Property, & CXO Corporate Metrics survey aimed at culling-out industry's current deployment and utilization of selected innovation and intellectual property strategies, processes, practices, techniques, and metrics.

We have been careful to design a questionnaire that should not cause interested participants to need to receive permissions or approvals from their company in order to participate. Our beta-test affirmed there is nothing in this research that requires the disclosure of confidential financial or business information.

Companies that participate in this research will receive a comprehensive document, complete with text and graphs, that summarizes each question across the population of respondents. Participants in our prior research efforts were satisfied with their results documents and sent us accolades for our research work. All participants that make an honest effort to complete this survey questionnaire will receive a copy of the results. Simply check the "Yes" box at the bottom of this page and answer all the questions.

We appreciate your time. We will absolutely keep responses confidential! We will never publish results that enable the identification of individual companies or responses, now or in the future!

THE RESEARCH PERIOD WAS SEPTEMBER 24, 2012 TO SEPTEMBER 30, 2013

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SECTION A

RESPONDENT PROFILE

The purpose of this section is to provide the information necessary to categorize your company in comparison to the population of companies that participate in this survey. The format for Section A is the exact same classification format as in all prior GGI surveys so results can be analyzed in a consistent manner over time.

| A1. Person completing survey: Name: Title: Company Name: Address: | This is the address to which the survey results will be mailed. |
|--|---|
| Phone: Email: | Fax: |
| Would you like a copy of the | The survey results? \Box Yes or \Box No |

| | e R&D-Product Development l Property, & CXO Corporat | |
|---|--|---|
| A2. Is this a \Box public or \Box private | company? | |
| A3. For what type/scope of company or o [Check One Box That Best Applies] □ Parent Corporation [A P/L Unit] □ Strategic Business Unit/HQ [A P □ Division/Business Unit/Grp [A P | /L Unit] | /Dept. [Cost Center] Plant [Cost Center] |
| A4. Identify the company's primary indu | - | _ |
| Aerospace Automotive/Vehicular Biotechnology Chemical College/Univ. R&D Computers Construction Consumer Products Defense Durable goods Software-Web Consulting Government | Education Electronics Engineering/Contract Design Food Heavy Machinery Industrial products Instruments Materials Medical Products/Devices/Inst. Metals/Mining Software-Digital Market Research Utility | Oil/Gas Paper/Publishing Pharmaceuticals Research/Nat'l Labs Rubber/Plastic Semiconductors Stone/Clay/Concrete Telecommunications Textiles Other Ind Software-Embedded Financial Services Other Svc |
| A5. Sales revenue over the last full year: $\square <$25M \qquad \square $25-100M$ $\square $1-5B \qquad \square >$5B$ | [Check One Box That Best Applie \$100-250M \$250-500M | |
| A6. Number of full-time employees: □ 1-500 □ 500-100 □ 10,000-25,000 □ 25,000- | | 5000-10,000 |
| A7a. Please indicate the types of maoperations or software environment:□□Process Mfg□Repetition | heck All Boxes That Apply] | |
| A7b."Software-Only" companies show□S/W As A Service□□Shrinkw | Ild reply to this question here: [Check vrap S/W | k All Boxes That Apply] tom S/W |
| A8. Places the company does business: [Check All Boxes That Apply] | North E America E Sales R&D Mfg | urope Asia Rest of World |
| A9. What function do you personally per Mgt Sales Mktg&BusDev Quality Environ/Safety/Regulated | $\mathbb{R}_{\mathrm{M}} \mathbb{D}_{\mathrm{Eng}} = \mathbb{D}_{\mathrm{M}} \mathbb{F}_{\mathrm{g}}$ -Production \mathbb{D}_{N} | Afg-Purchasing/Materials |

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SECTION B R&D OPERATING ENVIRONMENT

B1. Perceived Strategy: What is your company's fundamental approach to new product creation today? Please reply for what you currently do. Please do not reply as to what your company might do in the future or has done in the past, today's environment is the focus of this research. [Check One Box Only]

| □a. Innovator | We focus on being first to market with "new to X" platform products. We then go on to develop the next "new to X" platform product. We do not generally redesign, refeature, and extend platforms we launch. |
|------------------------|--|
| □b. Innovator-Extender | We focus on being first to market with "new to X" platforms periodically. We then create derivatives and adaptations of the platform for some time. We generally redesign, refeature, and extend platforms we launch. |
| □c. Balanced | We focus on having a balance of blockbuster to incremental products. We launch platform products periodically, but a typical year is a mix. We are viewed by the marketplace as offering a range of new products. |
| □d. Extender | We don't focus on first to market with "new to X" platform products. We are usually later to enter markets, but offer better value and support. We typically service our products to maximize product life cycle duration. |
| \Box e. Other | |

B2. Perceived Approach: Please complete the following sentence. Since 2008, "Organic R&D" [innovation/invention from within the company] has become _____ important at my company. [Check One Box Only]

| Much Less | Less | Same | More | Much More |
|--------------|------|------|------|--------------|
| | | | | |

B3. Perceived Tactics: Please complete the following sentence. Since 2008, "R&D and Product Development activities" have become _____ centralized. [Check One Box Only]

| Much Less | Less | Same | More | Much More |
|--------------|------|------|------|--------------|
| | | | | |

B4. Perceived Operations: Please complete the following sentence. Since 2008, the "number of physical locations performing R&D and Product Development" are _____. [Check One Box Only]

| Much | Ŧ | G | | Much |
|------|------|------|------|------|
| Less | Less | Same | More | More |
| | | | | |



SECTION C ORGANIC INNOVATION

C1. Types & Areas: Without disclosing any indication of emphasis or percentages of R&D investment <u>and</u> without regard as to whether the company accomplishes the type of R&D internally/organically or externally/open or both, please indicate the type(s) of R&D in which your company engages. [Check All That Apply]

- a. Basic Research Largely undirected investment aimed at pure discovery.
- b. Applied Research Application directed discovery aimed at finding methods/solutions.
- C. Advanced Development Application directed invention aimed at new methods/solutions.
- d. Product Development Application directed invention aimed at better methods/solutions.

C2. Research & Advanced Development Processes: Excluding "Product Development Processes," please indicate the type(s) of R&D for which your company maintains a "documented process" or "documented guidelines." [Check All That Apply]

| □ a. Basic Research | Company maintains separate documented process or documented guidelines. |
|---------------------------------------|---|
| □ b. Applied Research | Company maintains separate documented process or documented guidelines. |
| □ c. Advanced Development [Adv. Dev.] | Company maintains separate documented process or documented guidelines. |
| □ d. Combination Research & Adv. Dev. | Company maintains separate documented process or documented guidelines spanning Research & Advanced Development that is a separate process from Product Development. |
| □ e. Multiple Research & Adv. Dev | Company maintains more than one documented process or documented guidelines spanning Research & Advanced Development that are separate processes from Product Development. |
| ☐ f. None □ g. Other | |

C3. Product Development Processes: Not considering "Basic Research," "Applied Research," or "Advanced Development" in your reply, please indicate the number of documented processes or variants of an overall documented process that your company utilizes for "Product Development." [Check One Box Only]

| \Box a. No Process | There is no common process, product development just happens. |
|--------------------------|--|
| □ b. Single Process | All inventive activities are accomplished through a single management process framework. |
| \Box c. Two Processes | More complex products utilize a robust process and less complex products use a scaled-down process. |
| □ d. Three Processes | More complex products utilize a robust process, medium complexity products utilize a slightly less complex process, and the least complex products utilize a scaled-down process. |
| □ e. Four Plus Processes | Analogous to the "Three Processes" description above, my company discerns four or more categorizations of product development complexity and utilizes a specific process for each. |



SECTION D OPEN INNOVATION [OI]

D1. Open Innovation Activity: The term "Open Innovation," acquiring or collaborating on innovations and inventions with external organizations, has now been in the nomenclature of corporations for a number of years. Please indicate the degree to which your company utilizes Open Innovation techniques compared to what it did in 2008. [Check One Box Only]

| Much Less | Less | Same | More | Much More |
|--------------|------|------|------|--------------|
| | | | | |

D2. Open Innovation Results: My company separately tracks, or breaks out as an analysis, the financial results of Open Innovation initiatives. [True or False]

| a. We track the revenues coming from OI related development. | True 🛛 False 🗆 |
|--|--------------------------|
| b. We track the profits coming from OI related development. | True \Box False \Box |
| c. We track the development costs arising from OI related development. | True 🛛 🛛 False 🗌 |
| d. We track the capital costs arising from OI related development. | True \Box False \Box |

D3. Open Innovation Impact: My company believes that Open Innovation has had a ______ impact on the overall financial performance of the company. [Check One Box Only]

| Strong Negative | Negative | Neutral | Positive | Strong Positive |
|--------------------|----------|---------|----------|--------------------|
| | | | | |

D4a. Open Innovation Approaches - Inbound: My company now utilizes the following Open Innovation approaches to acquire capabilities. [Check All That Apply]

| a. | Crowdcasting/Crowdsourcing | |
|----|--|--|
| b. | Scouting Firms | |
| c. | Venture Capital & Entrepreneur Forums | |
| d. | Innovation Intermediary Firms | |
| e. | Private Industry Consortia Groups | |
| f. | Private Industry Business Portals | |
| g. | Targeted Proprietary Networks | |
| ĥ. | University Contract Agreements | |
| i. | Supplier Co-Development | |
| j. | Non-Competitor Joint Ventures | |
| k. | Competitor Joint Ventures | |
| 1. | Intellectual Property Auctions | |
| m. | Focused IP Search & Purchase or In-Licensing | |
| n. | None Of The Above | |
| 0. | Other: | |

D4b. Open Innovation Approaches - Outbound: My company now utilizes the following Open Innovation approaches to generate additional revenues or to trade/barter for additional capabilities. [Check All That Apply]

| | E at 10 | 000 |
|---------------------|---|--|
| Other: | | |
| | | |
| None Of The Above | | |
| _ | | |
| Trade/Barter Our IP | | |
| _ | | |
| License Our IP | | |
| Sell Our IP | | |
| | | |
| | Sell Our IP License Our IP Trade/Barter Our IP None Of The Above Other: | License Our IP Trade/Barter Our IP None Of The Above Other: |



D5. Open Innovation Processes: Excluding all "Applied Research," "Advanced Development," and "Product Development" processes identified in the previous Section C of this survey, please indicate the nature of any separately documented "Open Innovation [OI]" processes for which your company maintains either a "documented process" or "documented guidelines." [Check One Box Only]

| \Box a. Ad Hoc Process | There is/are no dedicated OI process(es). OI happens within the framework of the company's existing R&D and/or other processes. |
|---------------------------|---|
| □ b. Single Process | All OI activities are accomplished through a single documented process framework. |
| □ c. Two Processes | OI activities happen across two documented processes at our company. |
| \Box d. Three Processes | OI activities happen across three documented processes at our company. |
| □ e. Four Plus Processes | My company has a documented process that is uniquely tailored to each differentiable approach we have to OI. |
| \Box g. Other | |
| | |

SECTION E INTELLECTUAL PROPERTY [IP]

E1. IP Activity: Recognizing that Intellectual Property has been in the nomenclature of corporations for centuries, please indicate the degree to which IP will be more important in the next five years than it was in 2008? [Check One Box Only]

| Much | | | | Much |
|------|------|------|------|------|
| Less | Less | Same | More | More |
| | | | | |

E2. IP Results: My company separately tracks, or breaks out as an analysis, the financial results of Intellectual Property initiatives. [True or False]

| a. We track the revenues coming from IP related development. | True 🛛 False 🗆 |
|--|------------------|
| b. We track the profits coming from IP related development. | True 🛛 False 🗆 |
| c. We track the development costs arising from IP related development. | True 🛛 🛛 False 🗌 |
| d. We track the capital costs arising from IP related development. | True 🛛 False 🗆 |

E3. IP Impact: My company believes that our Intellectual Property initiatives have had a ______ impact on the overall financial performance of the company. [Check One Box Only]

| Strong | | | | Strong |
|----------|----------|---------|----------|----------|
| Negative | Negative | Neutral | Positive | Positive |
| | | | | |



IP Protection & Registration Processes: Excluding "Product Development Processes" and E4. "Open Innovation Processes," please indicate the type(s) of IP for which your company maintains a "documented process" or "documented guidelines" for protection and/or registration. [Check All That Apply]

| □a. | Copyright | Company has a documented process or guidelines. |
|------------------------------|---------------------------|--|
| □b. | Trademark | Company has a documented process or guidelines. |
| $\Box_{c.}$ | Company Proprietary | Company has a documented process or guidelines. |
| \Box d. | Trade Secret | Company has a documented process or guidelines. |
| Πe. | Enabled Publication | Company has a documented process or guidelines. |
| $\Box_{\mathrm{f.}}$ | Provisional Patent | Company has a documented process or guidelines. |
| $\Box g_{.}$ | Patent | Company has a documented process or guidelines. |
| \square g. \square h. | Single Process For All IP | Company has a universal process or guidelines. |
| \Box_{i} | Multiple IP Processes | Company has numerous processes or guidelines. |
| □ j. | No Dedicated IP Processes | Company does not have formal processes or guidelines. IP |
| J | | happens within the framework of the company's existing |
| | | R&D and/or other processes. |
| \Box_{k} . | Other | 1 |

E5. IP Revenue & Profit Generation Processes: Excluding revenues and profits accruing from intellectual property embedded in products the company produces and sells, or OEMs for others, please indicate the type(s) of IP for which your company maintains a "documented process" or "documented guidelines". [Check All That Apply]

| □a. | In-Licensing | Company has a documented process or guidelines. |
|----------------------|----------------------------|---|
| □ b. | Turnkey IP Purchase | Company has a documented process or guidelines. |
| $\Box_{c.}$ | Out-Licensing | Company has a documented process or guidelines. |
| $\Box d.$ | Turnkey IP Sale | Company has a documented process or guidelines. |
| $\Box_{e.}$ | Barter/Exchange | Company has a documented process or guidelines. |
| $\Box_{\mathrm{f.}}$ | No IP Generation Processes | Company does not have formal processes or guidelines. |
| $\Box g$. | Other | |

E6. IP Patent Decisions: How many times does the company review a given Design or Utility Provisional Patent or Patent proposal before finally making a business decision to either formally approve or formally reject the registration of the IP? [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 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 | One person/organization makes the decisions. Or, somehow it happens without any perceivable process. There is no cross-functional multi-disciplined management team that decides. |
| \Box e. Other | |



E7. IP Organization: Which statement best describes the organization and resources that support IP activities? [Check One Box Only]

- \Box a. Internal department(s) with internal IP counsel, fully self-sufficient.
- \Box b. Internal department(s) with internal IP counsel, aided by external IP counsel.
- \Box c. Internal department(s) with paralegal(s), aided by external IP counsel.
- \Box d. Internal department(s) without legal, all IP counsel is external.
- \Box e. Organized internal resources, external IP services company, separate external IP counsel.
- \Box f. Organized internal resources, external IP services company with IP counsel.
- \Box g. Organized internal resources, external IP counsel.
- \Box h. Identified internal resources, external IP services company with IP counsel.
- \Box i. Identified internal resources, external IP counsel.
- \Box j. Inventors and their managers, external IP services company with IP counsel.
- \square k. Inventors and their managers, external IP counsel.
- \Box 1. Little. IP activities are seldom, thankfully.
- \Box m. Other: _

E8. First To File Legislation: Is your company augmenting its procedures related to securing Trade Secrets given the passage of First To File legislation in the United States? Yes \Box No \Box Not Sure \Box

SECTION F RD&E METRICS USED IN INDUSTRY

Section F consists of one single question. GGI has asked this question in all research since 1998. The results of this research will be contrasted to the findings of prior research so participants will get the benefit of knowing not only the current industry status, but how the usage of metrics has changed over time. The results of the responses in this section in prior surveys have been quoted by CFO Magazine, Business Week, Industry Week and other respected trade journals. Search on "R&D Metrics" in your browser and it will be easy to find the 2008 results that Industry Week cited.

This research solely focuses on overall aggregate "Corporate-Level" measures of R&D innovation and performance. "Lower-level" metrics that occur in projects, functions, and departments are not included in the listed metrics, unless the company systematically aggregates them and averages them across all lower level activities such that they become an overall aggregate measure of Corporate-Level performance. Aggregated lower-level metrics listed in this section will always begin with a mathematical term. "Average Time-To-Market" is a good example. Many companies average "Time-To-Market" across all projects to determine an average speed. Time-To-Market is a Project Metric. Average Time-To-Market is a Corporate Metric.

F1. Which of the following R&D metrics are "in use" at the 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 consideration below. [Check All Boxes That Apply]



| REVENUE MEASURES | |
|---|--|
| Current-year % sales due to new products released in the past N-years [aka: New Product Sales and/or Vitality Index] | |
| 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 sales Current-year % sales due to total technology licensing and/or royalty income | |
| Average First-Year Sales of new products Average First Two Years of Sales of new products Average First Three Years of Sales of new products Average First Four Years of Sales of new products Average First Five Years of Sales of new products | |
| PROFIT MEASURES | |
| Current-year % profits due to new products released in the past N-years [aka: New Product Profits] If used, what is $N = \underbrace{Number}$ 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 sales Current-year % profits due to total technology licensing and/or royalty income | |
| Average First-Year Profits of new products Average First Two Years of Profits of new products Average First Three Years of Profits of new products Average First Four Years of Profits of new products Average First Five Years of Profits of new products | |
| THROUGHPUT & PIPELINE MEASURES | |
| # of idea/concept screened/reviewed # of products in definition/planning/estimation stages # of products/projects approved but not started [inactive backlog] # of products/projects in active development [active backlog] | |
| <pre># of new products released # of existing products actively supported/sustained # of products retired/obsoleted</pre> | |
| % of new proposed ideas/concepts approved/rejected % of new proposed products/projects approved/rejected % of new approved products/projects launched/stopped % of new approved products/projects successful/failures % of new launched products/projects successful/failures | |
| Average Time-To-Market Average Agile Velocity | |



CAPACITY MEASURES

| R&D capacity target level [person-months or equivalent] % Over/under R&D capacity plan target level | |
|--|--|
| R&D Headcount % 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 [Any Type] Staffing Ratios: Cross-Functional staffing ratios [Any Type] | |
| Average # production products supported per engineer or developer or scientist Average # active projects/ products per engineer or developer or scientist | |

PRODUCTIVITY MEASURES

| ROI - Return On Innovation [Calculated using any method/procedure.] RDEI - Research & Development Effectiveness Index NPVE - NPV Efficiency - Net Present Value Efficiency ROIE - Return On Infrastructure Employed RVG - Relative Value Of Growth EVA Momentum - Economic Value-Added Momentum EVA - Economic Value-Added RONA - Return On Net Assets ROC - Return On Capital RQ - Research Quotient | |
|---|--|
| AverageProject ROI - Return On Investment or AverageProject PaybackAverageProject NPV or AverageProject IRRAverageProject NPV Efficiency – Project Sales NPV/Project CostAveragesales/revenues per engineer or developer or scientistAverageprofits per engineer or developer or scientistAverageproducts produced per engineer or developer or scientistAverageparts produced per engineer or developer or scientistAveragedrawings produced per engineer or developer or scientistAveragedrawings produced per engineer or developer or scientistAveragelines of code produced 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] Average first pass design success [per new product] | |



PRODUCT PORTFOLIO MEASURES

| Value of Product Portfolio [Any A Value of Portfolio in Pipeline Value of Portfolio in Backlog [Not Risk of Product Portfolio [Any Ag Risk of Portfolio in Pipeline Risk of Portfolio in Backlog [Not Y | Yet In Pipeline] gregate Measure] | |
|--|--|--|
| # "New To X" Products Revenue \$ "New To X" Products Profit \$ "New To X" Products % Portfolio "New To X" | [X = The World, The Industry, The Market] [X = The World, The Industry, The Market] [X = The World, The Industry, The Market] [X = The World, The Industry, The Market] | |
| INTELLECT | UAL PROPERTY MEASURES | |
| # Patents filed/pending/awarded/reg Value of Patents filed/pending/awa % of Sales that is Patent-Protected % of Patents Generating Revenue % Patents Approved To Patent Approved | urded | |
| # Trademarks/Servicemarks filed/p Value of Trademarks/Servicemarks | pending/awarded [Any Combination] s filed/pending/awarded | |
| # Copyrights filed/pending/awarde Value of Copyrights filed/pending/ | | |
| # IP Out-Licenses grantedValue of IP Out-Licenses granted# IP In-Licenses acquiredValue of IP In-Licenses acquired | | |
| # Grants received Value of Grant revenues received | | |
| # Industry Standards planned/pend | ing/achieved | |
| Average Patents per Development Average Revenues per Patent Average R&D Spend per Patent Ap | | |

INVESTMENT MEASURES

| R&D spending as a % of sales | [Composite number across the company.] | |
|--------------------------------------|---|--|
| Research spending as a % of sales | ["R" reported separately from "D."] | |
| Process R&D spending as a % of sales | [Process R&D reported separately from R&D.] | |
| | | |

Average development cost per project/product Average capital cost per project/product Average cash expense cost per project/product



PLEASE RETURN BY SEPTEMBER 30, 2013

Responses Will Not Be Accepted After End-Of-Business Pacific Time On This Date

SEND BY US MAIL, UPS, FEDEX, DHL, ETC... TO

Primary Research Goldense Group, Inc. 1346 South Street Needham, MA 02492

781-444-5400

SEND SCANNED FILES BY EMAIL TO

research@goldensegroupinc.com

FAX IT TO US 781-444-5475

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. We have a dedicated fax line and machine, but please call us to tell you are faxing it.

IF YOU HAVE QUESTIONS OR NEED CLARIFICATION

Matt Brophy x204, Brad Goldense x205

781-444-5400

!! THANK YOU FOR PARTICIPATING !!

GOLDENSE GROUP, INC., NEEDHAM, MA