

# Using Human Capital Search Tools to discover and retain 'hidden' skills

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A case study  
for  
Semiconductor Companies

r/ally Inc.



## Background - Highly skilled engineering staff are more in demand

It is an acknowledged fact that the semiconductor industry is constantly changing. But the last 5 years has seen an acceleration of that change. The annual rate of mergers and acquisitions in semiconductors and semiconductor equipment has doubled in the last 5 years, compared to the period from 2000 to 2010.

This activity has resulted in a smaller number of companies in the semiconductor sector; couple this with less EE graduates entering the industry, and the result is that the skills of highly experienced engineers and engineering managers are more in demand than ever before.

The challenge for HR managers, talent managers and engineering leaders in semiconductor companies is finding these skills and retaining them in this competitive environment.

## Hiring Challenges - New Approaches Needed

Most HR departments own an in-house database of resumes or profiles that contain tens or hundreds of thousands of profiles. These are the legacy resumes that have passed through HR over the years, some of which pertain to current employees who have been hired over the years.

The resume databases are typically part of an HR solution (e.g. SuccessFactors) or an Applicant Tracking System (ATS) used for sourcing, recruitment, onboarding ,etc. These solutions provide automation of the recruitment process or in the case of an HR/HCM solution, a means of tracking performance for current employees after initial hiring.

Unfortunately none of these solutions provide information that enterprises need most in order to find, track and retain the most needed skills, which are :-

1. an intelligent search capability that understands skills or knowledge that are associated with the specific skills that HR or an engineering manager is searching for
  - unless the exact keyword of the needed skill happens to be in the profile, the search with the current solution returns null results
2. a mechanism for generating – and maintaining – an up to date skills profile of every engineer in the organization
  - this is an essential starting point to gain a holistic view of the quality and quantity of skills in each of your design centers

## Scope

In this case study, we'll illustrate how HR and Talent Managers, Design/Engineering team leaders can benefit in 3 areas

1. Bring engineering skills profiles up to date across the entire global organization – without engineers having to complete profiles – and keeping them updated. This provides a foundation for the next benefit point, which is
2. To find current employees with the relevant skills and experience that may already exist in a legacy resume database, but have been 'hidden' because the current search tools do not have the intelligence needed to uncover these skills
3. Finding external candidates for new vacancies, by enabling hiring managers to search candidates' skills and experience to find associated relevant topics or keywords that indicate who may have the required skills, even though the exact skill, project experience or product knowledge is not listed in the resume

## About r/ally

r/ally is an enterprise search solution for helping enterprises find out "Who Knows What" in a semiconductor company.

Specifically, r/ally's Human Capital Search (HCS) solution adds intelligence to automation to provide answers to questions posed about skills, experience or knowledge in a data source, i.e. a legacy database.

r/ally recognizes millions of concepts and their degree of association with each other.

So, rather than relying solely on a keyword search, it uses the knowledge of these learned concepts – which are continually being updated from internal data sources and validated against external knowledge bases - to identify individuals with skill sets that match, or are associated with, the skills needed. It also lists the associated topics that it found to validate the answers it provides in its search results.

## Updating Internal Skills Profiles

In this first section, we'll cover how engineering skills, knowledge and experience are updated by r/ally to enable the corporate HR team to start the search process with an up to date source of current engineers' skill sets.

At the commencement of a subscription agreement, r/ally provides a capability to analyze the log files from the automated jobs submitted by engineers during the course of a period of time leading up to the current point in time. r/ally reads the log files and matches users to jobs run, from which skills can be derived. So, by parsing the last, say 6 months of log files, r/ally can build a picture of the skills that are possessed by each engineer, and how often that skill is used, over that period.

r/ally creates an updated profile of each engineer's skills and writes those to an internal data source so that it can be used by the enterprise in future.

r/ally uses this information - in addition to other data sources – as a reference for future searches so that it can find the person with the most relevant skills for a future assignment or role in the company.

It can also be used by other r/ally products, such as the Human Capital Strategic Planning solution. This tool provides a holistic overview of the owner and location of all skills in the company, in addition to 'rarity' of those skills, so that HR and senior management can identify skills 'gaps' ahead of time and make contingency plans to augment skills in desired areas.

## Internal Skills Search

### *Search Process*

Once we have an up to date skills profile for everyone in the enterprise, we are in a position to start the search process.

In this scenario, there are 3 steps to the search process using r/ally

- 1) An engineering manager identifies the core knowledge requirements for the post to be filled, and provides a member of the HR team with a brief requirement based on the skills and

experience that the engineering manager wishes to use as the key skills needed for the open position

- These skills will undoubtedly include semiconductor industry terms – terms that r/ally's semiconductor taxonomy and hiring managers will be familiar with

2) HR then uses these core knowledge requirements to search r/ally

- r/ally analyzes experiences in prospective candidates' backgrounds to detect direct matches and indirect matches with the required knowledge sets

3) r/ally then identifies a summary of the candidates that have the most relevant skills that match those skills that are 'connected' or associated with these experiences

- HR can perform more detailed analysis of the short list of candidates by expanding upon the profile information provided by r/ally

### *Sample Query*

To start the process, the HR or engineering manager enters a search request to r/ally.

Let's assume a layout engineer is required and that it would also be helpful if they know Cadence tools. The request may look something like the text shown below

## Human Capital Search

r/ally's Human Capital enterprise search discovers who knows what in your organization.

In the field below, state what you need to know and r/ally highlights colleagues who have the skills, experience or knowledge you need.

Find me someone who knows about:

get me a CAD engineer who knows Cadence layout and place and route

Rank the Experts »

### *Extracted Skills and Knowledge*

r/ally identified the skills and knowledge requested and displays a list of the candidates that it believes to be potentially relevant to the requirement. It displays the leading candidates' skills by








listing them in order of relevance, identifying each candidate with a ‘weighted’ score.

## Results

Based on your query:

*get me a CAD engineer who knows Cadence layout and place and route*

r/ally thinks the following colleagues might be able to help you:

User	Score	First Name	Last Name	Highest Relevant Skill	Direct Skills	Indirect Skills	Primary Knowledge Area	Secondary Knowledge Area
 <a href="#">Show Skill Profile</a>	113.26	Alex	Ford	computer-aided design	8	0	Software Development	Engineering
 <a href="#">Show Skill Profile</a>	98.47	Phoenix	Andrews	computer-aided design	4	3	Software Development	Engineering
 <a href="#">Show Skill Profile</a>	48.02	Sydney	Kielkamp	engineer	1	3	IT	Engineering
 <a href="#">Show Skill Profile</a>	45.93	Finley	Khan	engineer	3	3	Software Development	Engineering
 <a href="#">Show Skill Profile</a>	43.84	Sawyer	Bergkamp	engineer	2	4	IT	Engineering
 <a href="#">Show Skill Profile</a>	33.08	Mark	Rakshani	engineer	1	3	Engineering	Software Development
 <a href="#">Show Skill Profile</a>	23.48	Dylan	Hoddle	cadence design systems	0	6	IT	Software Development

r/ally displays a short list of candidates with their Highest Relevant Skill that it extracted from their profile. It also identifies the ‘Direct’ related skills and ‘Indirect’ related skills that each candidate possesses, along with other relevant areas of knowledge.

These headings have been derived from each individual’s profile. r/ally looks at the skills and experience in the profile database, looks at the frequency and currency of these skills, and experience and ranks them based on relevancy to the initial search.

r/ally understands the concept and value of time, so if two employees have equal skills or relevancy but one has a skill acquired more recently, he/she will be weighted higher than one with a similar skill but with more dated knowledge of that ‘skill’. A skill can be a product name, a vendor, design project name, subcomponent of an IC, a technique or other knowledge acquired that is relevant.

## Candidate Profile

Next, the HR manager can look at profiles. He/she would look at one of the candidate based on the combination of ‘ranking’, direct and indirect skills and Primary and Secondary Knowledge Areas.

To see more, one can expand on it by clicking on the *Show Skill Profile* button in the summary ranking table under each candidate presented. When expanded, the candidate profile will show the Relevant Directly and Indirectly related skill headings, as illustrated below

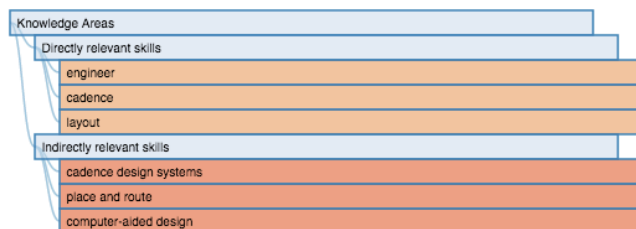
#### Employee Profile



Finley Khan  
Job title: Custom Physical Design Engineer at ABC Technology  
Location: Orange County, California Area, US

**Score: 45.93**

r/ally Query: get me a CAD engineer who knows Cadence layout and place and route

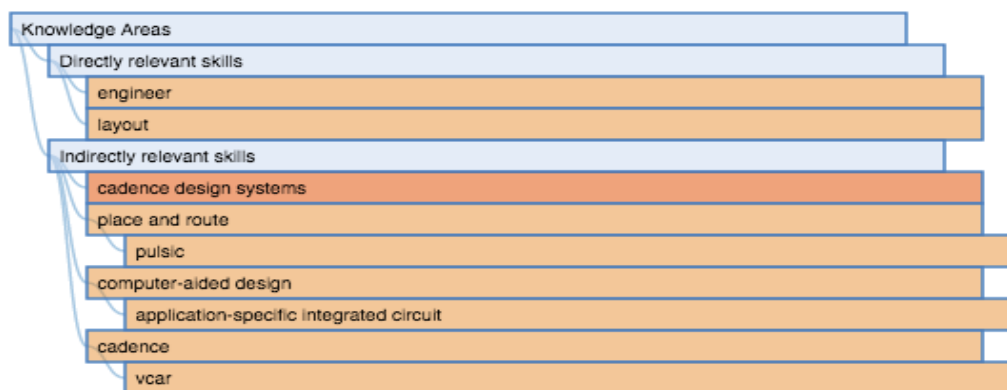


The summary profile told us that this candidate has 3 Directly and 3 Indirectly related skills, so we can inspect those further by clicking on each branch in the clustered tree graphic.

Notice that we can drill down to the direct and indirect skills to find out more.

We can see that this person has layout skills, knowledge of Cadence tools and CAD experience.

The Indirect skills tell us much more, though. We can see that this candidate knows about VCAR, a Cadence product, that is also a place and route tool. It also tell us that this person has experience of working on tools from Pulsic, another place and route vendor.



These indirect skills are discovered because r/ally knows about the association between different vendors, their products and the skills that are required to use these products.

These hidden skills enable HR team members by assisting them to find suitable candidates for engineering teams without having to have a significant and detailed understanding of the entire gamut of semiconductor design processes.

By using r/ally, the HR team member is able to find a short list of candidates for an internal role in a matter of minutes and present them to the engineering manager or person who seeks the requested skills.

## External Skills Search

Finally, let's look at how r/ally can be used to find a suitable candidate from an external set of resumes. This time we will look further at skills sets and additional areas of knowledge to gather as much information as we can about the candidates suggested by r/ally.

I need a data management expert who knows IC Manage and is based in Seattle

Rank the Experts »

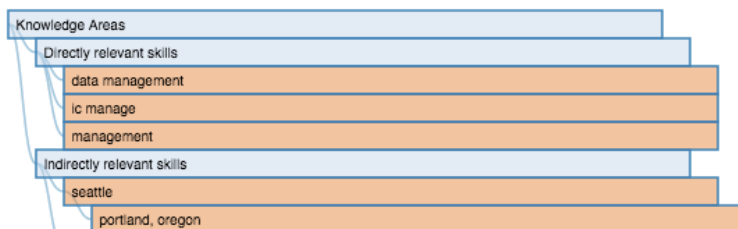
### Employee Profile



Michael Oh  
Job title: Data Management Consultant at Oregon DSP  
Location: Portland, Oregon, US

**Score: 93.53**

**r/ally Query:** I need a data management expert who knows IC Manage and is based in Seattle



We find a candidate who ranks highly, with 3 directly relevant skills. These include data management and IC Manage

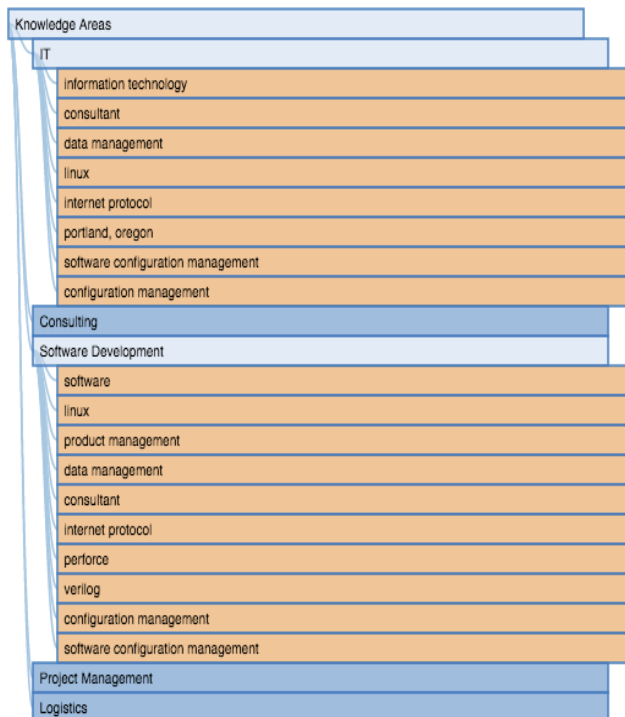
We notice that he has an indirect skill – that he is based in Portland, Oregon.

It's not Seattle, but r/ally suggest it as an indirect skill because a location is mentioned in the search.

We would like to get a fuller picture of the individual, so this time, we can look at the Additional Areas of Knowledge he possesses to determine his suitability.



#### Additional Areas of Knowledge



We can see that some additional skills were found which may be of relevance including

- Perforce – an IC Manage product
- SCM – a data management skill

In addition to these skills, the candidate knows Verilog, configuration management along with other skills that augment the initial information.

The process for generating this information takes seconds, meaning that a shortlist of candidates with associated skills – that would not otherwise be found in a keyword search – can be discovered very quickly.

The objective for r/ally is to provide a short list to enable the user to quickly find candidates with relevant skills, so that HR or engineering can then use his or her experience and judgment to enable them to arrive at a suitable short list quicker and more accurately than using a traditional keyword or boolean search engine.

## Summary

After taking input on the skills and experience required by the hiring manager, r/ally has been used to quickly, and easily, discover candidates with the appropriate skills required.

The entire process – including searching through a candidate database, has taken 15-20 minutes to find and reviewing a summary of potential candidates and arriving at a decision on which candidate(s) to proceed to the next stage with.

Using r/ally's Human Capital Search (HCS) solution in conjunction with r/ally's collaboration application for iOS, Android and Blackberry devices also enables HR team members, engineering managers and other interested parties to use r/ally from their mobile device.

## Benefits

This Case Study illustrates the versatility of r/ally and the significant reduction in time and effort and the costs that can be saved by using r/ally to quickly and easily discover individuals in the enterprise with the desired skills.

Because of the ability to save time by conducting multiple searches and iterating those searches, enterprises can

- reduce time spent looking for suitable candidates by over 80%
- increase productivity and fill more roles from internal candidates
- find and qualify candidates quicker than using traditional keyword search methods

## Return On Investment

When combining the cost of hiring and onboarding just ONE new employee hired externally, an enterprise that eliminates just one external hire per year will recover the cost of a 12 month subscription to one seat of r/ally's Human Capital search solution.

Semiconductor companies will generate additional savings of time and effort by using r/ally to update and maintain current skills profiles, which enables IP-based companies to leverage its most valuable asset – the skills and knowledge of its people.