



## Deriving Patterns of Communicative Competencies Among Software Developers, Using The 'Can-Do' Statements of the CEFR DIALANG Scales

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### ABSTRACT

*The roles and responsibilities of various employees as defined by the National Occupational Standards are both industry specific and job specific. As such, the skill-sets of employees vary not only between industries but also between specific occupational levels indicated by designation within the same industry. This study investigates if a pattern can be identified with regards to the perceived communicative competence of software developers.*

*Software developers in a company in the business of creating and managing software for the medical industry are chosen for the study. Given almost identical educational background and skill sets, working as they do to certain assigned roles and responsibilities of a particular designation, their communicative competencies in English are expected to conform to a pattern. The CEFR DIALANG scales are used to find out if such a pattern can be traced.*

*The CEFR "Can-Do" statements are administered in the form of a questionnaire and the results are statistically analysed. It is found that a definite pattern of communicative competencies is traceable as detailed.*

**Keywords :** perceived communicative competence, software developers ,DIALANG scales

### The National Occupational Standards (NOS)

The NOS was developed by the employers and stakeholders through the sector skills council to define the competencies, skills and performances that are required for the employee to perform in their particular occupations at their work place. According to the National Occupational standards, NOS means: National-they apply to the whole of UK, Occupational-they define the key functions someone should be able to carry out in an occupation, standard-they cover the outcomes that must be achieved."

### IT AND TELECOM STANDARDS

e- skills is the sector skills council for the IT industry, which is called as the Business and Information Technology or IT and Telecoms. It is responsible to maintain the NOS standards for the IT sector.

The IT and Telecom standards developed by the IT professional competency model e-skills Procom, is an established training framework which defines the standards, skills and qualifications that are required by the IT employees.

### The purpose of these standards is to ensure

- that the employees are competent enough to match the standards that are required by various organisations.
- that the employees have the right qualifications and technical knowledge that suits the requirements.

The IT and Telecom standards of the NOS divides the IT industry into seven disciplines, namely

1. Sales and Marketing
2. Business Change
3. Programme and Project management
4. Solutions Architecture
5. Solution Development and Implementation
6. Information Management and Security
7. IT service management and delivery.

If we take a closer look at the standards (NOS) being mentioned for IT and Telecom, we find that this hierarchy of designations, roles and responsibilities are similar in any IT company.

In this paper we are focusing on the responsibilities of the software developers, which corresponds to discipline 4(Solution Architecture) and discipline 5(Solution development and Implementation). Under the NOS, these are divided into various sub-disciplines and each sub-discipline has five different hierarchical roles under it, namely

Pre-Entry/Junior Technical (J): Associated Professional Role: (A)Professional Role:(P) Senior Professional (S): Lead Professional (L) The responsibilities or competencies required for each role is analysed under Performance Criteria, Knowledge and Understanding.

### AOSTA Software Technologies India Limited

Aosta Software Inc., an IT software company focusing on Health care products and services has been actively involved in developing and implementing healthcare related software services along with value added Services (VAS) and moves firmly with technology towards its vision.

The company is focused on providing applications that improves patient safety, automates revenue cycles, streamlines patient information and scheduling and derives better financial management .The company also offers software for companies involved in healthcare ancillary services such as blood banks, Diagnostic centres and pharmacies. AOSTA also demonstrates its healthcare expertise with software designed for practice management, home health and long term care provider

AOSTA has a number of employees who have various roles and responsibilities at the work place, though the hierarchy remains similar to almost all the IT companies. Let us look at the various roles of the employees working in software development in this company -

### Software Development Marketing

Architect - Web Design GM Marketing

Solution Architect Business development executive  
Software Developer Software Implementation

Database Administrator Customer Support executive

Project Leader – Software Development

**Quality Assurance**

Quality Assurance

Customer Support executive

When we look at the responsibilities under the various roles

cited, we find that though the majority of the responsibilities are technical there are still a significant number of responsibilities which are of a communicative structure.

Without applying the distinctions of the hierarchical roles of the sub-disciplines, we have attempted to comparatively look at the communicative components of the NOS for software developers and the communicative components of the responsibilities of the different roles of the software developers in 'AOSTA'.

ROLES AND RESPONSIBILITIES	
AOSTA	NOS
Architect - Web Design	4.1 System Architecture
Ensure web content and structure meet industry standards for best practices and are architected for growth. Identify and research emerging web technologies, features, and methodologies to ensure the Company's web properties adapt to changing standards. Develop guidelines and standards for the structure of the Company's static web properties. Verify that all web properties adhere to best practices standards for information design and implementation.	Identify what information is contained within current IT/technology architecture models and road maps. Document what information is held within, processed and used by the organisation. Assist others with the implementation of architecture models. Report ant issues arising from IT/technology architecture work. Communicate and liaise what information and data is held within, processed and used by the organisation.
Solution -Architect	4.1 System Architecture
Develop and deliver custom solutions based on customer requirements. Acts as the ultimate authority on the architecture design to address business problems. Prepare detailed analyses, plans, diagrams and procedures within a technical design document. Continuously monitor software and suggest improvements and Lead the review process for software architecture documents	Accurately gather specified information relating to the information that is held within, processed and used by the organisation. Maintain existing IT/technology architecture models and road-maps. Document information relating to business strategy, business rules and operating model. Communicate the importance and value of IT/technology architecture work to sponsors, stakeholders and other individuals.
project-leader software-development	5.Solution Development and Implementation
Work together with team members to plan and execute projects. Track and report the status of projects on various teams. Demonstrate a software plan that meets the future needs. Helping developers resolve problems. Provide leadership and guidance to coach, motivate, and lead team members to their optimum performance levels and career development.	Document software development and testing activities accurately and clearly to allow further development, amendments and updates to be made to solutions. Verify the accuracy, currency, completeness and relevance of information used during software development activities. Advice subordinates on how to optimize the use of systems resources by software. Advice colleagues on the sue of appropriate programming constructs to produce effective software.
Software Developer	5.Solution Development and Implementation
Developing business solutions by creating new and modifying existing software applications. Write, modify, and debug software for client applications.	The activities and tasks involved in software development. Assist with discussion, negotiation and agreement of how the software will function with sponsors and stakeholders during software development. The importance of communicating the results of testing to others as necessary.
Database Administrator	4.5 Data Design
Providing technical support for the database environment. Controlling access permissions and privileges. Develops a methodology for the ongoing assessment of database performance and the identification of problem areas. Develops a security scheme for the database environment, as well as assisting in disaster recovery if necessary.	The processes, tools and techniques which can be used to conduct and document data design activities. Correctly implement and maintain all processes, tools and techniques relating to data design activities. The rules and controls required ensuring the integrity, privacy, and security of data held within the data design.

**Table 1: Comparison table between Aosta and NOS.**

Looking at this table, we find a significant similarity in the content of primarily communicative responsibilities in both the NOS and as defined in the AOSTA roles and responsibilities.

This study aims to further evaluate the communicative responsibilities of the software developers in relation to the standards of the CEFR(Common European framework of reference). The Common European Framework provides "a common basis for the elaboration of language syllabuses, curriculum guidelines, examinations, textbooks, etc. across Europe". It describes in a comprehensive way what language learners have to learn to do in order to use a language for communication and what knowledge and skills they have to develop so as to be able to act effectively.

A preliminary survey was conducted at the same IT company using the 'can do statements'. "The can do statements" are adapted from the DIALANG scale of the CEFR . The DIALANG scale is a language assessment system of the CEFR,

it is an application which is used for diagnostic purposes by the Common European Framework of Reference. It was funded by the European Commission, Director General for Education and culture (SOCRATES programme ,LINGUA Action D).

The advantages of using the DIALANG scale are that it encourages the concept of autonomous learning where a learner has more control over his learning and to create an awareness of the learning process.

The European foreign language Examinations has devised the ALTE-The Association of language testers in Europe-The ALTE is one of the major contributors to the language testers in Europe. The can do project has been funded by the European Union Lingua , and has been described by Alderson as being more a user oriented scale rather than a constructor or Assessor.

Uses of the can do statements- (i) The can do statements can be used as a tool for language teaching and testing. (ii)It can be used for diagnostic purposes. (iii) Learners will be able to

match their language abilities at particular levels (iv) the can do statements help to specifically look at requirements of language trainers, who want to move higher in their designations ,promotions and for better salaries.

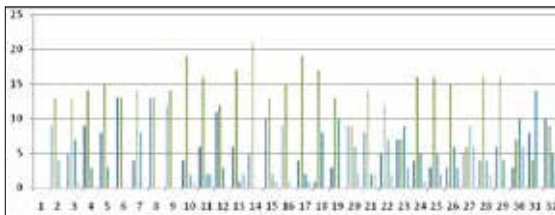
Methodology: A Questionnaire was distributed to the employees, consisting of Questions which were related to the Reading and Writing components of the “can do statements” of the CEFR.

A total of 64 Questions were framed of which 31Questions pertain to the Reading skills and 33 Questions are with reference to writing.

Out of the 62 employees of the company, 26 software developers were selected to participate in the study. Software developers alone were chosen for the study by virtue of their being the largest group of employees within the organisation.

The employees were given the options of -(i) strongly agree (ii) agree (iii) disagree and (iv) strongly disagree- in response to each of the ‘can do’ statements listed. The pattern in which the employees selected the above options was analysed as follows:

**READING**



ReadingGraph1:The above graph is for Reading Stronglyagree-Darkblue,Agree-Greencolour,Disagree-Light Blue,Stronglydisagree-purple.

**Stronglyagree,**

5.I can understand short simple messages e.g. on postcards  
7. I can understand short, simple texts written in common everyday language.

11. I can understand short simple personal letters.

**Agree**

13. I can understand simple instructions on equipment encountered in everyday life –such as a public telephone.

09. I can find specific information in simple everyday material such as advertisements, brochures, menus and timetables.

17. I can search one long or several short texts to locate specific information I need to help me complete a task.

**Disagree**

31. I can understand and interpret practically all forms of written language including abstract, structurally complex, or highly colloquial literary and non-literary writings.

19. I can identify the main conclusions in clearly written argumentative texts.

23. I can read correspondence relating to my fields of interest and easily understand the essential meaning.

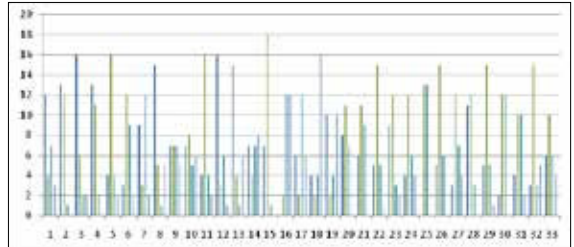
**Stronglydisagree**

27. I can quickly identify the content and relevance of news items, articles and reports on a wide range of professional topics, deciding whether closer study is worthwhile.

23. I can read correspondence relating to my fields of interest and easily understand the essential meaning.

21. I can understand the description of events, feelings and wishes in personal letters well enough to correspond with a friend or acquaintance.

**WRITING**



WritingGraph 2:The above Graph is for Writing

**Stronglyagree**

34.I can fill in forms with personal details.

44. I can describe past activities and personal experiences.

32. I can write simple notes to friends.

**Agree-**

45 . I can write very brief reports, which pass on routine factual information and state reasons for actions

35. . I can write simple isolated phrases and sentences.

42. I can explain what I like or dislike about something.

**Disagree**

56 I can expand and support points of view at some length with subsidiary points,reasons and relevant examples.

48 . I can describe dreams, hopes and ambitions.

7. I can give short, basic descriptions of events and activities.

**Strongly Disagree**

50. . I can describe the plot of a book or film and describe my reactions.

44. I can describe past activities and personal experiences.

48. I can describe dreams, hopes and ambitions.

**Conclusion:**

The standards laid by the NOS for software developers are almost universal in that they closely resemble the standards prescribed by companies in the roles and responsibilities for their software developers. The communicative responsibilities of these software developers, when analysed in reference to the ‘Can Do’ statements of the CEFR, show a definite pattern of abilities and frequency of application of the abilities, as evidenced in the above study.

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