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COMPUTER SUPPORTED CONTRACT NEGOTIATION: CONTRACT NEGOTIATOR - AN EXPERIMENTAL PROTOTYPE

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Abstract

CONTRACT NEGOTIATOR is a tool developed to enhance a contract negotiator's decision making by assisting him/her to identify actual and potential issues sequentially and to consider the strength of their legal and factual position on each such issue as it arises, with a view to determining the risks of proceeding to the next issue in sequence.

It is a decision-support system designed for business men/women and their professional advisers in protracted negotiations and for students of business law in the course of the negotiation-rôle-playing exercise Wheeler-dealer. The system, therefore, is intended to be both an 'adviser' to immediate ends and an "educator" to more distant ones.

CONTRACT NEGOTIATOR acts to provide legal advice and facilities to a user with minimal distortion to that user's actual and potential options, given expert human advice and facilities. Its structure is based on a model of the negotiating process. It can, therefore, be described as a knowledge-based system.

CONTRACT NEGOTIATOR is designed to operate under English Law. Whether such an approach, appropriately amended, would be equally suitable for other fields of law than contract, or for Civil Law or Confucian/Marxist legal systems, remains as yet uncertain.

1 Introduction

Legal decision making in commercial transactions is often badly served by a legal profession which is trained in crisis management and the structure of which tends to militate against organisational integration. Conversely business managers, who may in almost all other respects be effective negotiators, suffer from insufficient access to good legal advice on issues arising in the course of contract negotiations.

This is especially difficult where decisions may be delegated to a low managerial level, or in the case of small businesses, where the immediate involvement of legal advisors necessary to a proactive approach is difficult (see *per* Lord Campbell CJ in *Humfrey* v *Dale* (1858) 7 E & B 266 at pp. 278-9). The result, especially during economic recession when business/legal flexibility is a first casualty, is often grotesquely disproportionate to the effort involved. Both of these shortcomings are a result of educational *lacunae*.

The need thus identified was to build a system suitable for a decision support rôle, alerting, advising and educating the user, whilst allowing the final decision to remain within his/her control. The importance of this last point has also been recognised by others working on knowledge-based systems in legal domains, for example De Mulder and van Noortwijk (1994). Some aspects are still not amenable to computer support, however. It is, for example, neither possible, nor particularly desirable to provide for a presentation function within a forensic context as opposed to a bargaining context. This is traditionally done in person and is likely to remain so for the foreseeable future.

The key problem which has to be resolved for an effective decision-support system purporting to advise on the law, is how to develop a representation of the legal domain which accurately promotes the characteristic legal method. This paper describes the

representation used in CONTRACT NEGOTIATOR, and then goes on to describe the structure, technology and operation of the system.

2 The legal domain: stages, phases and issues

The whole domain of a legal system is defined by the 'legislative' function of government. This can conveniently be represented diagrammatically by a rectangle divided vertically into private and public law, as shown in Figure 1. Each may be further subdivided into major and minor legal domains. Private law may be divided into transactional and non-transactional domains. 'Transactional' private law consists principally of 'simple' contracts, speciality contracts together with some aspects of trusts or company law, and perhaps such negotiable registered rights as industrial property. Hence, it is characterised by a legally defined autonomy, whereby interests and risks are created privately by the parties, or their adoption by trade usage 'in accordance with' the law, i.e., not illegally. Whereas English Common Law speaks of the parties' common contractual intention, French Civil Law refers to the parties' private legislative acts. "Agreements legally made take the place of law for those who made them." (*Code Civil Art* 1134, in translation). Hence, only transactional private law has legal rules designed to regulate the private creation of interests and risks. All domains, however, have rules designed to regulate the discharge of interests and risks.

The testing of legal uncertainties, whether of legal principle or of legal circumstance, in both public and private sectors, is the essential business of the 'judicial' function. The resolution of privately disputed uncertainties, whether transactional or non-transactional, is again characterised by a two-phase process, in which a distinction is drawn between formal

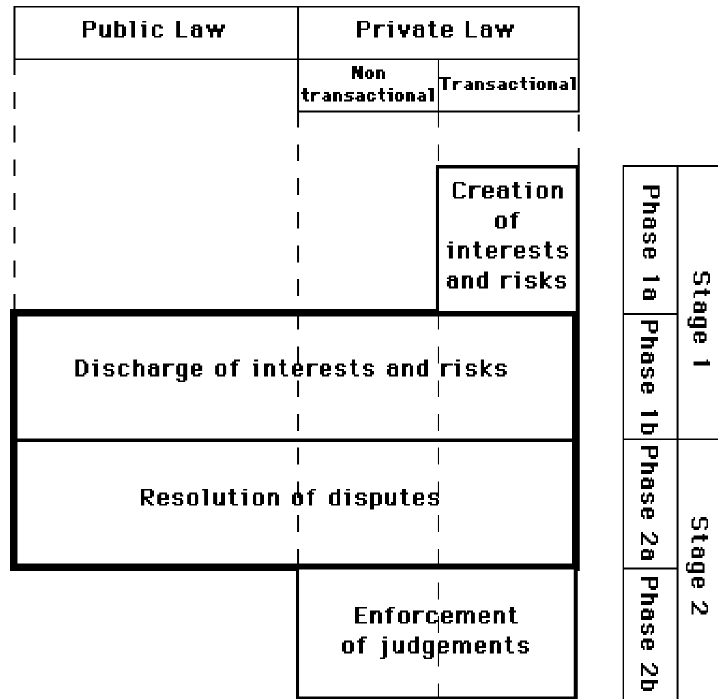

Figure 1: The domain of transactional private law

pronouncement on the allocation of legal interests and risks between the parties, coupled with a remedy substituting alternative interests and risks in compensation for any imbalance, and the coercive enforcement of such existing judgement. Publicly disputed uncertainties are the sole prerogative of the 'executive' governmental function. This is represented in Figure 1 by a further horizontal division in which the upper part, in two phases, contains legal rules relating to the substantive creation and discharge of transactional interests and risks (but only the discharge of other interests and risks), and in which the lower part, likewise in two phases, contains rules relating to the judicial, or extra-judicial resolution of disputes and, in the private sector only, rules for the enforcement of judgements. Consequently, transactional private law can be distinguished from other legal domains as falling into exactly two discrete sequential 'stages', each further subdivided into sequential 'phases'. Each stage represents a characteristic form of negotiation. Stage 1 is a 'contributory' form of negotiation where each of the interested parties contributes to a 'kitty' of potentially unlimited extent and withdraws benefits of commensurably great extent. Stage 2 is a 'distributive' form of negotiation where each of the interested parties can gain only what can be distributed from a finite 'kitty' (see Figure 1).

Key issues are those which any party to a contract is potentially bound to eliminate or resolve favourably in order to maximise his/her interests and to minimise his/her risks. At the 'contributory' negotiation stage, their identification is informal, depending only on the foresight of the parties and their advisors. At a 'distributive' negotiation stage, however, their identification is a formal process highly characteristic of the adversarial Common Law, which may be contrasted with the "inquisitorial" process of Civil Law systems (Devlin, 1979). It takes place through the assertions and counter-assertions, reservations of legal principle, qualifications of facts and admissions in interlocutory pleadings.

Such issues can also be marshalled for resolution sequentially. Each can be presented in a form capable of eliciting a 'Yes' or 'No' answer, depending on whether the proposition is articulated positively or negatively and whether applied to the interests/risks of the one party, or the other.

3 Legal method: 'Proof' in English law

Within any issue, interactive legal method is ultimately characterised by the need for forensic 'proof', either of law or fact. Criteria for the theoretical distinction between 'law' and 'fact' are hallmarks of a wide variety of legal philosophies. In practice, English law adopts a characteristically pragmatic criterion. If resolution of the issue requires material which is judicially 'noticed' it is one of 'law'; if evidence needs to be brought, it is one of 'fact'. The distinction is not without its anomalies, however. Accordingly, some (i.e. 'notorious') facts may be judicially noticed, such as the identity of government ministers, whilst some (i.e., foreign) law, such as the law of Scotland, must be proved by expert evidence.

Issues in the definition and applicability of legal principle or factual circumstance are subject to the requirements of 'legal' and 'evidentiary' burdens of proof respectively.

Moreover, since each such issue of 'law' or 'fact' is conditional on the converse legally provable fact, or factually significant law, respectively, such issue is potentially both law and fact, or fact and law, until it has been resolved beyond dispute, i.e., on the balance of probabilities.

Properly structured legal argument, therefore, requires assertions of principle and the facts to which they are applied to be supported - the former with authority, the latter with evidence.

The existence and substantive content of contracts, i.e., contractual terms and conditions of trade, requires discharge of both legal and evidentiary burdens of proof, respectively, divided amongst: the law itself, trade usage, and statements of the parties.

These matters are discussed further in Akroyd and Edwards (1995). English adversarial procedure, moreover, in contrast with the French, German or Japanese 'inquisitorial' approach, prevents a judge from introducing even relevant law or facts if, however wrongly, they have not already been referred to by the advocates for contending parties. The parties carry 'legal' and 'evidentiary' burdens of proof correspondingly. The general principle that 'he who asserts must prove' is subject to legal characterisation of a proposition in negative terms and to any initial presumption in favour of the point to be proved. Thus, in the words of Lord Mansfield (*R* v *Jarvis* (1756) 1 East 643 N) "It is a known distinction that what comes by way of proviso in a statute must be insisted on by way of defence by the party accused". The evidentiary burden of proof normally lies on a party asserting relevant facts. Accordingly, documentary evidence is construed *contra proferentem* i.e., against the party offering it. Similarly, the injunction against counsel asking leading questions of witnesses, giving evidence in chief, is lifted for their cross-examination.

Since the standard of proof in civil cases is relative, not absolute, with balance of probabilities rather than the margin of doubt as the criterion, the successful party will be the one who adduces evidence more cogent than the other. The so-called 'shifting' of the burden of proof from the one to the other party results from adduction of evidence sufficiently convincing as to raise an inference of legally significant fact, which requires refutation. It may also take place as a result of the other party's admission, or their *estoppel* from denying assertions in such official records as judgements, deeds and agreements, as well as their own previous statements or conduct.

3.1 The negotiating process in practice

Negotiation can be conceived as involving five functions, to be carried out in sequence (Guo and Akroyd, 1994). These functions are shown in Figure 2.

Team building involves assembling the right combination and structure of people and skills for the negotiation at hand. These will include not only business people, but also lawyers and, for example, technical experts, interpreters, translators or overseas agents.

Research involves not only the relevant legal authorities, but also any factual circumstances relevant to the negotiation. Potentially, therefore, this could include all aspects of the search for storage, analysis and evaluation of business intelligence.

Planning is one of the two decision-making functions: investigating possible courses of action and attempting to influence their likely consequences. It particularly involves the structuring of legal argument towards a given outcome from favourable authorities, combined with anticipation and undermining of counter-arguments.

Presentation is the communication of ideas, decisions, documents and opinions to others in the course of relationship or dispute negotiation. In principle, it includes the essential legal skill of advocacy in court. Presentation may be omitted from the cycle, where the process is inherently one of planning, or where the user wishes.

Review is the second decision-making function. Negotiation of a contract (or other legal relationship) is a dynamic, rather than a static activity. Plans may need to be changed in the light of changing influences on the user's overall strategy, or where the outcome is not in accordance with the strategy.

On any single issue these functions basically operate sequentially. However, the fourth function, presentation, may be omitted to allow direct transition from planning to review, where presentation is rejected, or unnecessary. In addition, limited backtracking to the previous function may take place, although this would not be sensible after presentation.

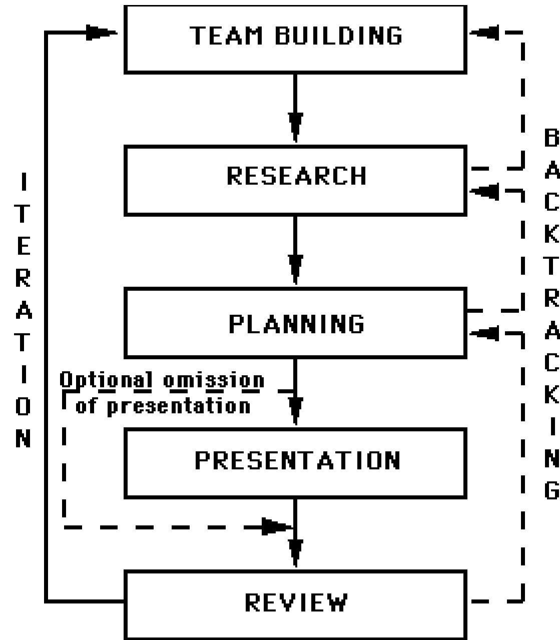

Figure 2: The functions in the process of negotiation

The objective of CONTRACT NEGOTIATOR, therefore, is to support each of these five functions, either directly or indirectly, both by the legal content of the system (the domain) and by its operational structure (the method).

4 The structure and operation of the system

CONTRACT NEGOTIATOR is intended to provide support for the entire negotiating process. Although this support is comprehensive, it is not at present complete; nor is it ever likely to be, at least for the research and presentation functions. Complete support for the former would at minimum require all printed information to be available in electronic form, whilst the latter would need an 'advocacy support system' which is well beyond the capabilities of current information technology.

CONTRACT NEGOTIATOR consists of four main elements: the Main Menu, the Research Menu, the Risk Advisor and the Action Pad. Table 1 shows how these elements support the five functions in the negotiating process. We note that the support provided for the team

FUNCTION	SUPPORTED BY:
Team building	Main Menu
Research	Main Menu, Research Menu
Planning	Main Menu, Risk Advisor
Presentation	Main Menu, Action Pad
Review	Main Menu, Risk Advisor

Table 1: Five functions of CONTRACT NEGOTIATOR, each supporting a negotiating function

building function is indirect; it is a help for determining the skills and structure required in the team, but not for the personnel selection or the development of team spirit.

4.1 Main Menu

The Main Menu identifies a series of 36 sets of legal issues, arranged sequentially through phases 1a, 1b, 2a and 2b of the negotiating process. There are 14 sets of issues at phase 1a, 8 at phase 1b, 12 at phase 2a and 2 at phase 2b.

The system is conceived in terms of 'your party' and 'the other party', who may be one or more individuals, or collective persons. The system assumes that 'your party' is the user to whom questions are addressed. Subject to this distinction between 'us' and 'them', however, there are no further constraints. Hence 'the other party' may be another user of the system, or a non-user.

The mode of operation of the Main Menu is deliberately rigid. Although the user remains in full control of the decisions which are made, the objective of CONTRACT NEGOTIATOR is to ensure that relevant issues are brought to the user's attention, as a human legal advisor would do. It asks the user to consider at each issue whether they can 'prove' their best interests as defined by the positive/negative phrasing of the issue and its application to 'your party' or 'the other party'.

The Main Menu works on the basis of a question-and-answer dialogue. At each issue in the sequence, CONTRACT NEGOTIATOR effectively asks the user "Can you prove that.....?" in relation to both legal principle and factual circumstance. Each issue takes the form of a number of statements about 'your party' and/or 'the other party'. An example of an issue question from phase 1a is shown in Figure 3.

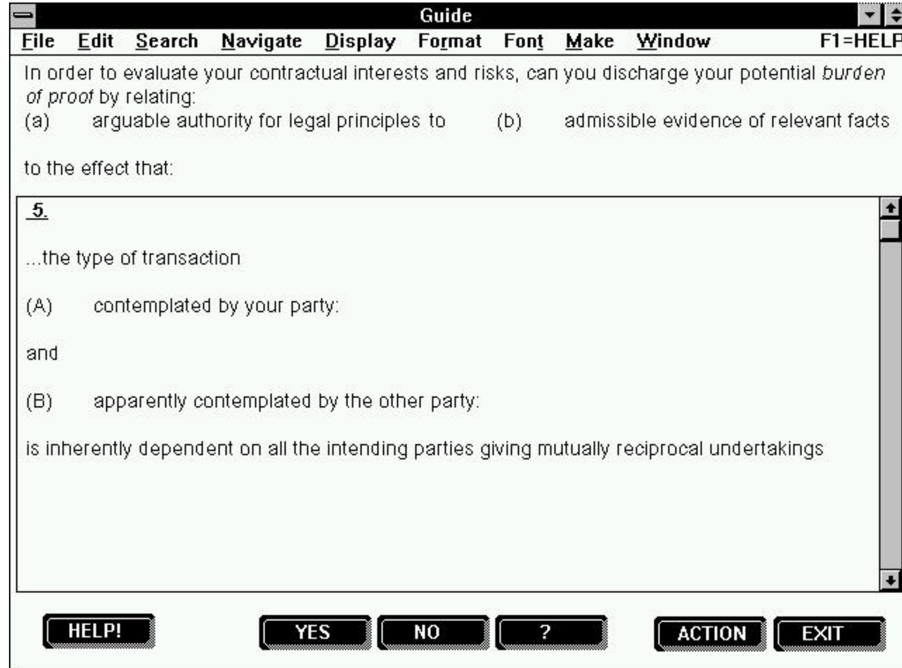

Figure 3: One of the Main Menu issue screens from CONTRACT NEGOTIATOR

4.2 Research Menu

If the answer is 'Don't know' the system presents the Research Menu, allowing the user to choose from a digest of the law relevant to that particular issue, databases of legal forms including contractual terms and conditions of trade, and LEXIS, before automatically re-presenting the same issue for a more informed answer. This process can be repeated indefinitely until the user is satisfied with the quality of his/her decision.

4.3 Risk Advisor

In a sense, this part, rather than the Main Menu, is the core of the system. Its main purpose is to support the planning function, gearing an escalating incidence of risk to the decision to proceed without its adequate discharge.

If the answer to a Main Menu question is a definite 'No', the system presents the user with a series of five possible escalating actions designed to obtain such a proof, each representing an increased incidence of risk, before advising the user to begin again or discontinue altogether.

For each issue, the only possible answers are '?'(Don't know), 'No' or 'Yes'. Figure 4 shows the relationship between these answers and the parts of CONTRACT NEGOTIATOR.

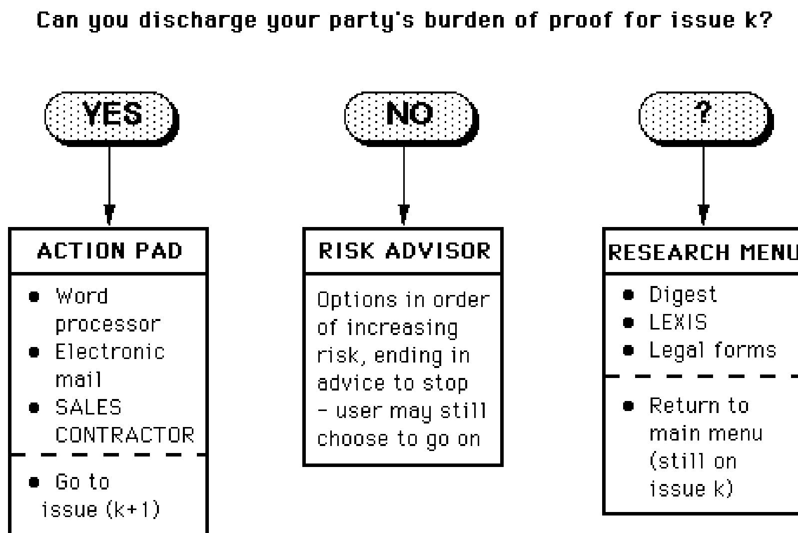

Figure 4: The relationship between the parts of CONTRACT NEGOTIATOR

The essence of this approach lies in the maximisation of a party's interests in the transaction by progression from one issue to the next, combined with the minimisation of their risks by noting any inability to prove their case on any given issue. The opportunity to be informed in advance of such risks is vitally necessary, to enable the user to obtain evidence before proceeding or to change their course of action. An attempt to obtain evidence might also involve other risks, such as informing the opposite party of a negotiation objective, or tactic. Hence, the opportunity of being alerted to this possibility may be no less crucial to a party's decision whether to accept the risk and go on, to reject it and concede potential interests, or to modify the priorities by going back and taking alternative action with a different incidence of risk. In such cases, the Risk Advisor provides up to five opportunities to remedy the situation, each associated with

an escalation of risk, before advising the user to begin again, or to opt out altogether; equivalent to the system 'washing its hands' of a proposal. If, on the other hand, the user decides that such an attempt would involve a worthwhile balance between risks and interests, the system offers a review option, enabling him/her to browse through previous issues with all system facilities available.

4.4 Action Pad

If the answer to a Main Menu question is 'Yes' the system presents the user with the 'Action Pad'. This allows him/her to draft terms of trade using the decision support system SALES CONTRACTOR (Akroyd and Edwards, 1995) or to communicate with another party, via a word processing package or electronic mail. On leaving the Action Pad, the user returns to the Main Menu and is presented with the next issue in sequence.

5 Technology

CONTRACT NEGOTIATOR is now in its third prototype. This is the first networked version, adding access to LEXIS and electronic mail to the previous links to SALES CONTRACTOR and a word processing package. The majority of the system is written in Guide. The main reason for this choice was to enable a good user interface to be constructed with the minimum amount of programming effort. The facility to create buttons, and to use a button to activate another application, turned out to be particularly crucial. The use of Guide also gives the option to include hypertext links between parts of the text in the Research Menu's Digest, but this has not been implemented in the current prototype. The reasoning behind this decision is that the purpose of the Digest is to give advice on relevant legal issues, not to define terms. The main technological issue in the Digest was handling the amount of text involved, and this was accomplished by scanning it in from a textbook (Akroyd, 1987).

The other 'parts' of the Action Pad are actually links to other applications. CONTRACT NEGOTIATOR's contribution is the link rather than the content. SALES CONTRACTOR is written in the expert system shell Xi Plus. It only deals with contracts for the sale/purchase of goods, but could in principle be replaced/augmented by other equivalent systems. Any word processor may be attached; both Microsoft Word and WordPerfect have been used in trials. The same applies to electronic mail; trials have used Pegasus Mail. LEXIS, by contrast, is not open to user choice, but an essential. The crucial point here is that the necessary payment or subscription arrangements must be in place; a non-trivial problem! There is no additional software problem in including links to other communications media, such as telephone and fax, in the Action Pad, only the hardware problem of ensuring that suitable connections, modems, etc. exist.

6 Current status

The third prototype is due to be tested with students of business, including some specialising in law, in their negotiation rôle playing exercise Wheeler-dealer during the coming academic year (1995/96). Demonstrations to potential business users are also planned, but there are certain problems which must be overcome before the system could be used in business. These include licensing of the Digest and LEXIS, communications support, and the legal status of electronic mail communication.

7 Evaluation

As a true decision support system, CONTRACT NEGOTIATOR places the human user in a central position. This 'outside inward' approach is in direct contrast to the 'inside outward' approach involving analogy between logical models of discourse and

rhetorical argument, for example the work of Gordon (1993). These two approaches should however be seen as complementary rather than competitive. CONTRACT NEGOTIATOR's approach is rigid, as trials of the user interface suggested it needs to be, but the user remains in control.

CONTRACT NEGOTIATOR in its present form can therefore best be described as an unintelligent knowledge-based system. It is knowledge-based, but is not a conventional rule-based expert system (except SALES CONTRACTOR). Being structured around a particular representation of the negotiating process, it is a model-based system. However, unlike some model-based systems, it does not attempt to reason with deep knowledge, but rather to present the deep knowledge and its consequences to the user, who is left to do the final reasoning for her/himself.

The system cannot guarantee 'success', however that may be defined, and therefore does not attempt to. Indeed, the very fact that the distributive Stage 2 contemplates contractual default, litigation and the need for enforcement of judgements implies the reverse. Its purpose is that of a safety net designed to ensure that in any given situation the user is able to maximise their interests with a minimum of risk.

In principle, some more (artificial) intelligence could be introduced in order to link the research, planning and presentation functions by a machine learning process. This would need to use multiple mechanisms such as rule induction and genetic algorithms. This would necessarily involve recognition of the inductive/heuristic character of legal planning from a given outcome (yes/no) towards an authoritative principle.

This would probably be best done selectively on research sources, statutory and case data bases to provide material for placing of high quality argument, (i.e., outcomes, authority and legal principle), which would need to be reversed on presentation (i.e. principle, authority and outcome). This remains speculative at present however.

More promising areas for exploration might be to test a similar approach in other domains of law than contract, or for other legal systems, such as Civil Law or Confucian/Marxist.

8 Conclusion

This paper has described the principles behind the knowledge-based system CONTRACT NEGOTIATOR, together with its structure and operation. Three prototypes have demonstrated that the concept can be made operational. The third prototype version is due to be used in trials with students in the near future, which (if successful) will also serve as a demonstration to attract 'real' business users.

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