Strategic White Paper on data driven decision making at Government & Public Sector enterprises in Qatar

Driving Transformation in Government through Analytics

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malomatia

excel with IT

Abstract

As Qatar looks to build a knowledge based economy based on the Qatar National Vision 2030, all the ministries across the government are striving to create effective, efficient, accessible and transparent service delivery mechanisms. Towards this endeavor, Qatar has designed an e-Government 2020 strategy- a master plan to accelerate the nation's e-government efforts.

A large number of government and public sector entities will now have the opportunity to enhance their service delivery by leveraging insights gained from the increased access to data and information about individuals and businesses. However, that would require significant change from current practices in terms of how the various government departments collect, collate, organize, analyze and share data.

This white paper explores the typical challenges faced by government entities and makes a case for change, using examples from success that other entities and government bodies have had across the world. It delineates the ways in which government agencies and departments can leverage intelligence and analytics to drive productivity gains.

This document is meant to stimulate strategic thought at key decision maker level, and is designed as your first agent of change as you embark on this journey.

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Introduction

Qatar has a stated objective of evolving to a highly knowledge driven economy. Technology will play a critical role in enabling government's vision to provide efficient and transparent services that are aligned to the requirements of individuals and businesses.
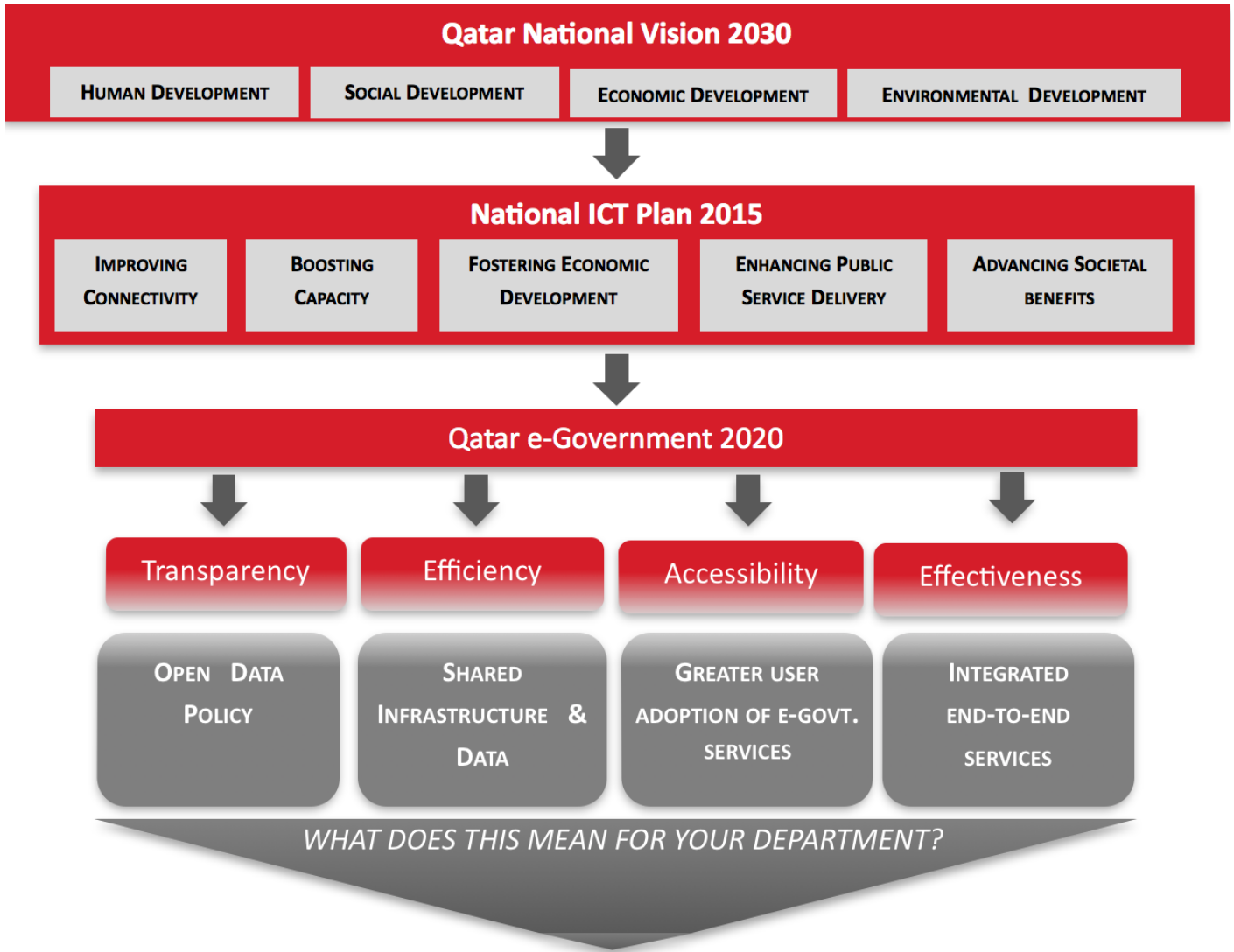
The e-Governance strategy for 2020 aims to benefit all stakeholders: citizens, residents, visitors, businesses and government entities, by moving a majority of the inter-stakeholder transactions online. One of the stated objectives of the strategy is to get 100% of all the government services in Qatar online by 2020.

This will not only result in a multifold increase in digital data but will also make 'analytical intelligence' central to providing efficient and effective service to businesses and citizens. This will mandate significantly higher levels of collaboration, productivity and transparency, while creating the opportunity for data driven continuous improvement.

Public interaction sits at the heart of any e-Governance initiative, and social media has emerged as the channel of choice for the public to communicate with governments across the globe. Governments across the world are getting swamped with ever increasing data created in large part by an increasingly larger number of transactions moving online.

"In order to further increase the transparency and accountability of the government, Qatar's government intends to release over time a large amount of non-personal, government-held data to the public…. This commitment to making a wide range of additional material available to individuals, businesses, and others in an easy-to-access format is also expected to help increase civic engagement, to encourage knowledge sharing, and to spearhead new technological innovations.»
Ministry of Information & Communications Technology 2014/2013 Annual Report

Figure 1:
Driving the e-Government 2020 agenda through effective Analytics

Qatar National Vision 2030

| HUMAN DEVELOPMENT | SOCIAL DEVELOPMENT | ECONOMIC DEVELOPMENT | ENVIRONMENTAL DEVELOPMENT |

National ICT Plan 2015

| IMPROVING CONNECTIVITY | BOOSTING CAPACITY | FOSTERING ECONOMIC DEVELOPMENT | ENHANCING PUBLIC SERVICE DELIVERY | ADVANCING SOCIETAL BENEFITS |

Qatar e-Government 2020

Transparency	Efficiency	Accessibility	Effectiveness
OPEN DATA POLICY	SHARED INFRASTRUCTURE & DATA	GREATER USER ADOPTION OF E-GOVT. SERVICES	INTEGRATED END-TO-END SERVICES

WHAT DOES THIS MEAN FOR YOUR DEPARTMENT?

Multi-fold increase in data generated from Businesses, Citizens and Other Government Departments
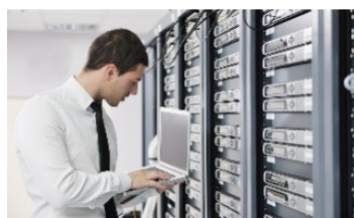
Definitive move from paper to 100% digital. Need for collecting, collating, organising and sharing data.

Using Analytics to mine data and extract the right information for data-driven decision making

Role of BI & Analytics in achieving e-Government 2020 Strategy

Increasing automation and digitization in the government from 2015-2020 will contribute to the creation of vast amounts of data that will be amenable to assessment and analysis. This data can be interpreted with analytics for increased decision support by providing visibility, insights and prediction.

Visibility:

Government agencies typically face a lot of data and paperwork, which when viewed in silos, will lead to inefficiency in processes. Analytical tools can help generate reports and visualize data in such a way that data driven decisions can be made. This will build transparency into government functions and improve performance.

Business Insights:

Business intelligence tools will enable a more customer facing government and help government agencies improve operational performance and delivery of services. The BI tools provide government organizations at any level, with the ability to view their data and transform it into real time actionable information for decision makers.

Prediction:

Predictive analytics can be used to drive precision point decision making, by extracting valuable insights from the enormous amount of data within government organizations. The prediction tools available today can be applied to reduce fraud and waste, automate manual processes and optimize personnel and resources in many areas, including identification of fraud, operational analytics, automation of claims related processing, revenue collection, text mining and prediction of crime.

The usage of BI tools and analytics in the public sector is to provide optimal service. With the increasing usage of powerful tools, decision making is expected to be quicker, reliable and accurate. Government organizations can take the right decisions at the right time and improve productivity and performance with the benefits of analytics, i.e. increased visibility, insights and prediction capabilities.

While there is a recognition of the value that data can provide, many government agencies still struggle with how they deal with data & the ability to convert it into actionable information.
Transformation from paper-based data to a digital world of collaborative information is not purely an IT initiative but requires a significant change in the business mindset as well.

Challenges for Government agencies in leveraging BI & Analytics

Qatar government agencies face challenges typical of most Government organizations across the world: Managing and making sense of exponentially growing data- in a shared and collaborative environment. Many government organizations are plagued with systemic inefficiencies that lead to lower performance and service delivery.

While the first step for Qatar Government agencies will be to move to 100% digital data platforms, the next level of challenge will be to operate in a collaborative environment- mining and sharing data across departments. They would need to work on integrating the individual data islands and utilizing the shared data for streamlining operations and improving decision making.

Challenges facing digitization initiatives could be technical, organizational (staff and management support), social or cultural and financial. Implementation initiatives for BI and analytics also face challenges with regard to data security concerns, data compatibility issues between different agencies and data privacy issues.

The most significant challenges faced by Qatari government organizations that hinder their ability to leverage data for better performance include:

1. **Legacy Processes** that have been heavily dependent on paper-work

2. **Lack of automation** for a number of processes that still require manual intervention will have a huge impact on scalability of information analytics

3. **Scattered Data** that have historically not been organized and have been stored in unresponsive silos. Data Readiness, Quality, integrity is a major stumbling block towards implementing an effective BI solution.

4. **Stakeholder mindset** to think from a business perspective rather than IT requirement perspective. Extracting the right business requirements from business users is another challenge typically faced during implementation

5. **Human Resource Capability** to manage this transformation and to consistently improve decision making based on data sciences.

These challenges have to be mitigated during the course of any BI and analytics implementation. A phased approach to implementing changes and educating users will bring about a transformation in thinking and decision making, as well as noticeable changes in service delivery and citizen engagement.

The Government is the largest producer of Big Data in the GCC region and yet has the lowest adoption rate for BI and Analytics solutions among all verticals

Business Benefits of BI & Analytics

Governments across the world, local, state and federal, are reaping benefits from incorporation of BI & Analytics in their operations. These tools can bring about a substantial transformation in government and enhance its relationships with citizens by improving performance and efficiency. The reporting capabilities drive availability and sharing of critical insights which will result in improved and superior decision making.

While private sector has taken a lead in harvesting benefits derived from actionable data, Public sector and government stands to gain from many of the same benefits such as improvement in service delivery, resource optimization, fraud and cost reduction (Figure 2).

There are however specific added benefits that are unique to the government and public sector, these are improved public safety and security, enhanced public health, and the creation of a platform for collaborative policy formulation, etc.

Governments in the region are well positioned to take advantage of the data driven approaches to drive productivity improvements and deliver higher quality of services within shortened timeframes. It is expected that Governments in this region will leap from BI reporting tools and data warehouses to mobile BI, predictive analytics and dashboards.

Figure 2: *Business Benefits of BI & Analytics*

- Crisis response coordination
- Share data across jurisdictions to uncover criminal activity
- Better healthcare outcomes

- Increased intra-government collaboration
- Process improvement & increased efficiency
- Increased transparency and real time updates
- Innovation in existing and new services

Health & Safety

Service Delivery

Data driven Govt.

Fraud Detection

Cost Savings

Optimize Resources

- Eliminate errors & opportunities for fraud with online processes and enhanced data sharing
- Analyze usage patterns to detect fraudulent behavior

- Eliminate redundancies
- Uncover potential for cost reduction through focused interventions

- Deploy limited resources where most needed
- Predict requirements for services and utilities

Enhanced service delivery

Typical automation initiatives in Government tend to be implemented in silo's. Few departments and agencies create a technology architecture that allows collaboration and sharing across agencies and departments. This legacy constraint can be addressed by BI & Analytics solutions, which can then lead to increased level of collaboration and benefits.

Citizens are more likely to get a capable service deliver when processes are supported by BI and Analytics. There is an increased visibility on underlying trends, which drives improved processes and results in design and roll out of new services aligned to the needs of all stakeholders.

Cost Savings

Increasing number of government departments are looking at technology as an enabler in cost reduction or resource optimization. A significant proportion of investment in enabling infrastructure is driven by the potential to manage spends in a more effective manner.
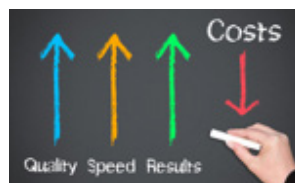
A government agency in Qatar recently leveraged BI & Analytics to develop insights into its operations and enhance reporting and decision support. It has implemented a tool that provides relevant, easy-to-use and real-time trade data to both internal and external users. The key challenges the department had to overcome during implementation was issues related to data quality and the ability to seamlessly integrate data from various silos.

Analytics has a significant role to play in assisting government agencies in managing and improving their cost structure. Government agencies can leverage monitoring tools and predictive analytics to develop appropriate cost savings without significant changes to the quality of service delivery. Public sector tends to have legacy processes which in absence of routine reviews lead to prevalence of redundant sub-processes. Analytics provides the agency or department to review and understand the service requirements and re-design processes.

Australian Government has a Digital Transformation Office that uses analytics to improve delivery of government services1. It analyses call requests and uses findings to modify relevant government portals with the objective to drive self-service and reduction in similar calls.

Federal Authority for Government Human Resources, in the UAE, is a public sector agency that oversees HR function within ministries and federal authorities. FAHR uses HR analytics to design and roll out new HR policies with the objective of reducing absenteeism and improving productivity and performance of the civil services workforce.

United States Postal Service (USPS) uses analytics to optimize its transportation and thereby drive higher asset utilization, resulting in substantial cost savings.

Seoul Metropolitan Government analyzed data from more than 25 years on pipe leakage, and discovered a correlation between weather conditions and leakage points. It led to design of a new system that uses analytics to control pressure and subsequently has reduced the leakage rate from about %79 in 1987 to about %2.5 in 2014, resulting in significant cost savings to the department.

Resource Optimization

Government departments face a unique challenge in that customer expectations are dramatically increasing, while the resources available to address the various concerns are either stagnant or in some cases even reducing. As more customers seek holistic and speedier resolutions in the future, this gap will widen further and drive a need for productivity enhancement and resource optimization.

Analyzing usage patterns on the data collected by government agencies can help uncover opportunities to optimize limited resources and improve utilization. Increasingly, cities are using analytics to fight crime by using real time dashboards to identify high risk areas and optimize law enforcement deployment decisions. This approach can be replicated to other services such as utilities, especially electricity where any excess capacity cannot be stored.

Improved public health and safety

Governments across the world are using analytics and data to improve healthcare services delivery. Data based decisions can lead to better healthcare outcomes, increased efficiency and proactive planning.

Healthcare analytics can be used to assess risk profiles of patients and drive better planning of healthcare requirements. Electronic health records can be used to enable both doctors and individuals to access their medical history at any time and view previous diagnoses, test results, prescriptions and current treatments for better decision making.
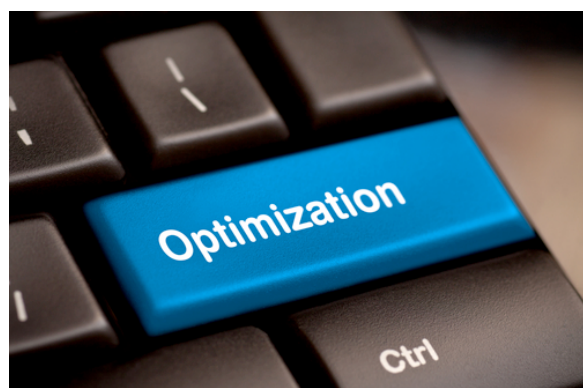
Denmark altered its approach to predict electricity used to rely on various partners to predict and produce required capacity as needed by business and individuals. However, after deploying a data driven approach, the capability to predict expected consumption could be managed on an hourly basis, thereby reducing wastage.

Singapore health ministry is driving analytics adoption by providing easy to use analysis and data warehousing tools to show data as actionable information. Staff can now view real time data and take quick decisions for efficient healthcare delivery. In addition, hospitals are analyzing usage patterns to better match manpower with predicted patient arrivals.
Kenya uses data driven decision making to identify 'at risk' zones for malaria and then drives preventive action by analyzing people movement by tracking their mobiles.

Statistical analysis of crime patterns can help uncover hidden connections and provide intelligence to city authorities. Public safety can be improved by installing CCTVs and sensors that capture and integrate data.

Drancy, a Paris suburb, dramatically improved city surveillance by using analytics to build insights on data gained from a fiber network that connected 300 CCTVs.

Fraud Reduction

Government benefit programs are vulnerable to fraud especially when information is stored in silos. Transferring processes online, sharing data between agencies, identifying and removing systemic gaps can eliminate errors and opportunities for fraud. Analytics and BI tools can be used for a holistic view of interactions and services consumed, and provide insights on usage patterns.

Belgium has achieved a reduction in tax fraud, resulting in savings of nearly a billion euros each year6. Customs officials are provided with the ability to rank import-export transactions and estimate risk in real time and look beyond individual shipments to uncover fraud. The transactional data history is then applied to define risk mitigation for future custom shipments as well.

Any e-Government initiative to digitalize government operations will not reach its fullest potential without focusing on data warehousing and analytics. BI solutions when utilized by the government, allow government entities to quickly equip their staff with the insight necessary to successfully conduct government work and processes. Vast amounts of data can be interpreted into insights within minutes, which can then be used to drive better decisions and improve transparency, reduce costs and increase productivity.

Way Forward

Qatar's e-government strategy for 2020 and Qatar National Vision 2030 envision an effective and open government where nearly all services can be accessed online or on mobile in a transparent and efficient manner.

In pursuit of its e-Government 2020 Strategy, Qatar can learn from the lead of governments around the world that are engaging in a multi-stakeholder strategy with regard to big data, BI & Analytics for policy making, service delivery, helping growth of businesses, increasing talent and building future-facing governments.

BI & Analytics can add significant value to conformance to Qatar's e-government strategy. Analytics can be leveraged to increase adoption of services by citizens and businesses, improve government efficiency & effectiveness and drive higher quality service delivery. It can even be leveraged to identify which services need prioritization based on transaction volume criticality of need of individuals and businesses.

To be successful, the digital ecosystem should be built right from the start to capture all interactions & transactions, which are then analyzed from a perspective to improve processes, help plan future changes, prioritize and suggest new applications.

The critical success factors for successful BI and analytics use in government are:

Business thinking: Initiatives have to be driven by the key stakeholders of government functions, with a holistic approach and not viewed as a standalone IT initiative.

Data integrity: The issues with data redundancy, data cleansing and data availability have to be resolved in a thoughtful manner, and capture all data from a future-forward focus, so that all data requirements, present and future, are built in to the new tools.

Phased approach: One of the means to improve user adoption, especially amongst key stakeholders or business users, is to allow quick wins to inform users about the true capabilities of BI. When the users can view and analyze data, they understand the magnitude of BI applications and demand more functionality to be built into their dashboards and BI tools.

Self-service BI: Self-service business intelligence, allows business users to become self-reliant – they can query, work with and analyze government data, without any help from the IT function. The data warehouses are already set up and ready to be accessed by business users through self-service mechanisms. This empowers business users to get the information they need to answer their questions, without IT involvement for each question. The technology has to be built in such a way that the tools are easy to manage and allow users to gather the data they need, from multiple sources, analyze and share the results, without having to understand how to access the data from a technical perspective.

Government implementations should take into considerations the above critical success factors for their BI & Analytics initiatives for higher traction and success with the business users and staff.

A data driven approach will drive higher adoption of online services. It is easier to

show benefits such as tracking of service status, but will require educating users on how to access services as well build trust on security of transactions. Analytics can also be used to better understand the approaches that have higher traction with consumers, which can be used to fine-tune strategy.

Usage of BI & analytic tools provides government the ability to monitor important parameters like service utilization, real time transaction volumes, speed of service delivery or the time to resolve a request, view backlogs and make real time decisions on easy-to-view dashboards.

Analytic capabilities must be designed to meet specific and clearly defined objectives, and data management should be positioned around its specific use. Small and incremental steps can help transition government agencies to shift processes online, build data warehouses and increase departmental collaboration, in a planned and structured manner, as shown in Figure 3. Sponsorship from high level leadership is critical to success.

Figure 3:
Roadmap for Government Transformation through BI & Analytics
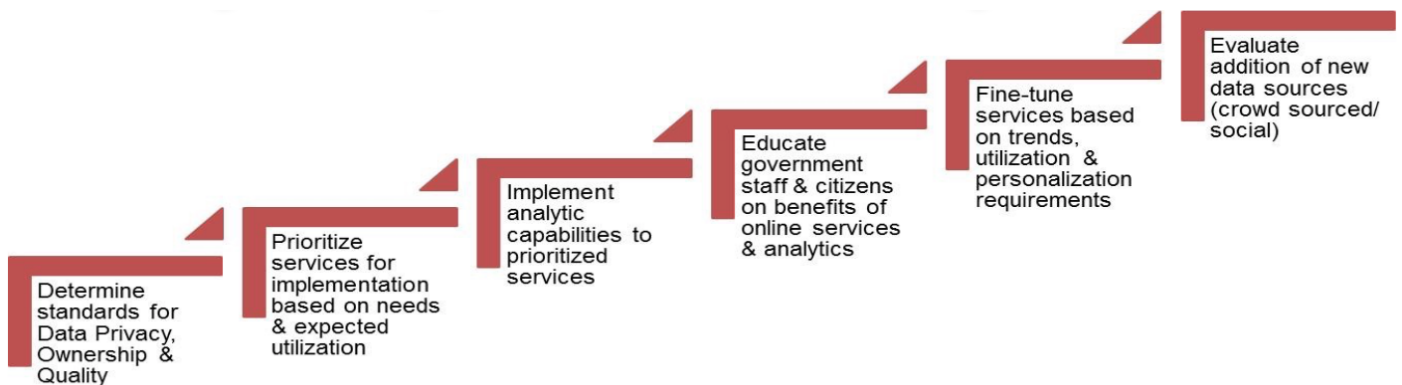
About malomatia

Established in 2008 as a Qatari Shareholding Company, malomatia is an integrated IT Service and Solutions Provider that aspires to enable Government and Business to excel by offering competitive, cost effective, high value solutions, while building local IT talent for long-term sustainability in Qatar.

Focused on supporting Qatar National Vision 2030 to achieve economic diversification, malomatia aims to foster and retain Qatar's IT talent to support the transition towards a Knowledge-Based Society. With extensive national experience and a deep understanding of existing local business needs, malomatia focuses on prioritizing projects in areas that are of national relevance to Qatar and its society, providing specialized domain expertise in three key national priority areas, namely, the Government, Education and Healthcare sectors.

Our unique capabilities supported by strategic collaboration with global IT segment leaders, adherence to global best practices and the deployment of the very best international and local expertise, offer our clients a wide range of best-of-breed solutions and service offerings.

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