



**Nomination for NASCIO State IT Recognition Awards – State of Michigan
Michigan Liquor Ordering (MILO)**



STATE: State of Michigan
AGENCY: Licensing and Regulatory Affairs – Michigan Liquor Control Commission
AWARD CATEGORY: Government To Business
PROJECT TITLE: MICHIGAN LIQUOR ORDERING (MILO)
PROJECT END DATE: February 2021
CONTACT: Stuart Willard
Business Relationship Manager
willards@michigan.gov
517 526 5410

Project Narrative

The State of Michigan’s Liquor Control Commission (MLCC), by law, is the sole wholesaler of all liquor and distilled spirits products – purchasing these products from suppliers and selling them to retailers. The wholesaling operation involved the sale of more than 10.5 million cases of spirits sold in Michigan. Michigan is one of 17 “control states” as related to the alcohol beverage industry. The MLCC provides a significant return on investment for the State of Michigan, as all profits and taxes collected through this wholesaling activity are returned to the State’s General Fund for appropriation by the state legislature to support a wide range of state programs that benefit the people of Michigan.

The legacy liquor ordering application is approximately 20 years old, and it was not meeting the needs and expectations of the businesses in this 21st century. The Michigan Liquor Ordering System (MILO) is a modernization of a legacy system that offers a convenient way for approximately 14,000 MLCC licensees (businesses, retailers, and restaurants) to be able submit liquor orders online 24/7 for a wide range of liquor products from their laptops or their mobile devices.

[SOM Liquor Ordering \(michigan.gov\)](http://michigan.gov)

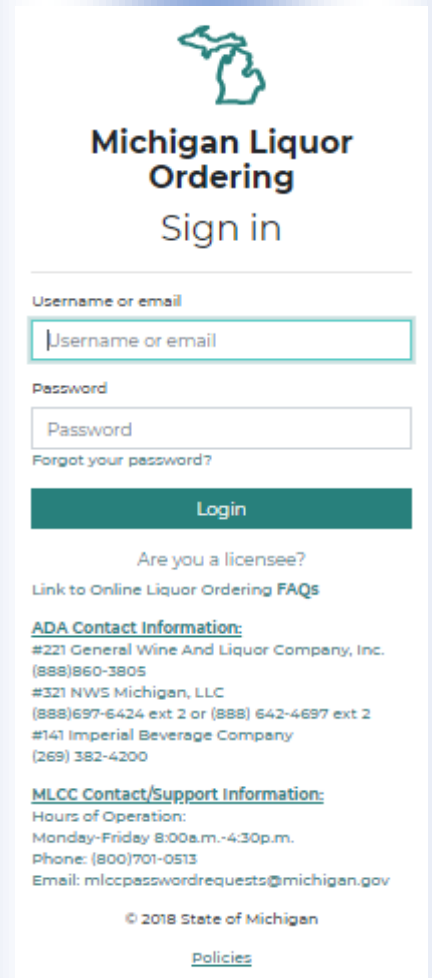
MLCC has three Authorized Distributor Agents (ADA) that house the State’s liquor inventory. The ADAs have their own inventory management system. The suppliers and manufacturers register their products with the State of Michigan. All suppliers are required to submit a contract with the ADA which is then approved by the MLCC for distributing their products to the licensees. Suppliers are also required to register their distilled spirits in the MLCC system which then goes through the Commission review/approval process before the products can be sold within the state.

The MILO system interfaces with the ADA’s inventory management systems to verify the availability of the products on the order submitted by the licensees in real time allowing the licensees to choose alternatives if a product is not in stock. The MLCC sets the pricing on the distilled spirits products. MILO generates an invoice for the licensee’s order along with the order confirmation and expected delivery date which is emailed to the licensee. The ADAs deliver the order to the licensees in their delivery trucks and collect the payments.

The MILO system offers new features and enhanced capabilities that has led to greater efficiency and significant improvement to the user experience for the businesses in addition to meeting their business needs. The MILO system went live on February 2, 2021 and is continuing to evolve based on the feedback from the licensees. There are approximately 35,000 + orders submitted per month via MILO.

Some of the key features of the MILO system include:

- The product search allows licensees to be able to search for products by brand name, code or type and sort them.
- Quick add feature for licensees that know what products they want to order.
- Ability to save the list for licensees who order the same products every week.
- Allow businesses to set up master accounts which can create sub accounts for their staff and to maintain them.
- Retains the licensee’s partial order that they can resume later to confirm the order.
- Retains customer order details within the State system.



The screenshot shows the login interface for the Michigan Liquor Ordering system. At the top, there is a green outline of the state of Michigan. Below it, the text reads "Michigan Liquor Ordering" in a bold, dark font, followed by "Sign in" in a slightly smaller font. The login form consists of two input fields: "Username or email" and "Password". Below the password field, there is a link that says "Forgot your password?". A green "Login" button is positioned below the form. Underneath the button, there is a link for "Are you a licensee?" and another link for "Link to Online Liquor Ordering FAQs". Two sections of contact information are provided: "ADA Contact Information" and "MLCC Contact/Support Information". The ADA contact information lists three entities: #221 General Wine And Liquor Company, Inc. (888)860-3805, #321 NWS Michigan, LLC (888)697-6424 ext 2 or (888) 642-4697 ext 2, and #141 Imperial Beverage Company (269) 382-4200. The MLCC contact information lists the hours of operation (Monday-Friday 8:00a.m.-4:30p.m.), phone number (800)701-0513, and email address mlccpasswordrequests@michigan.gov. At the bottom, there is a copyright notice for © 2018 State of Michigan and a link for "Policies".

IDEA

Problem Identification

The legacy liquor ordering application is approximately 20 years old, and it was not meeting the needs and expectations of the businesses in this 21st century. The legacy application clearly lacked some key features.

- The user interface was poor making it difficult to navigate.
- The legacy application cannot be accessed on mobile devices.
- The licensees did not have the ability to search for products. They had to look up an online price book outside of the application to look up the product codes and key in the codes into the system. The businesses, having a longer list of items, would timeout frequently due to the effort/time involved to key in the items.
- Many of the licensees had identical orders that were submitted every week. Since there was no ability to save the list of items, it was a huge effort for the licensees to key in the same products every week.
- The business did not have the ability to set up sub accounts for their staff and shared their credentials with them which was a huge security concern.
- There was no ability for the licensees to save a partial order and come back later to resume from where they left off. The session would time out and the licensees had to start all over again.
- The legacy liquor ordering application was not designed to persist the licensee order information in the State system. The orders were stored on the ADA systems causing MLCC not to be self-reliant. MLCC was relying on the ADAs to send the order information to track the State inventory for liquor products and the liquor sales.

Main goals

1. Improve user experience by expanding functionality for the 14,000+ businesses.
2. Accessibility on mobile devices.
3. Include product search/sort capability by brand name, product type etc. for approximately 12,000 liquor products in the inventory.
4. Ability for licensees to be able to retain their partial orders so they can come back later to complete it and submit the order.
5. Ability for licensees placing repeat orders to make a copy of their previous order to avoid having to key in the same products repeatedly.
6. Ability to set up master accounts for businesses that can create sub accounts for their staff, bar tenders etc. without having to share their credentials.
7. The MLCC's legacy financial system is the next system to be modernized. The legacy financial system was relying on the order information sent from the ADAs for their inventory balancing and there were some discrepancies identified. The MLCC identified that they can overcome these discrepancies by storing the licensee order information within MILO, thus setting a platform to build on for the future modernization effort for the MLCC's financial system which was on the MLCC's roadmap for their Legacy Application Modernization efforts.
8. Avoid duplication of product data within multiple MLCC systems, thereby eliminating the need for interfaces and any additional resources to keep them in sync.
9. Allow MLCC to be self-reliant and NOT rely on the ADA systems for the order information which is key to MLCC's daily balancing of the State inventory for liquor products and the liquor sales in general. The daily liquor sales is approximately 4-5 million dollars on an average with last year's annual sales hitting an all-time high of 1.8 billion dollars.

Implementation

Project Team

The Project Team consisted of a project manager, business analyst, product sponsor, product owner, the MLCC subject matter experts (SMEs), developers, solution architect, database administrator, and configuration manager. There were ongoing discussions with the ADAs and the several retail groups to obtain input from licensees.

Research and Project Approach

The high-level business requirements were captured and the request for information (RFI) process kicked off in 2018, followed by the request for proposal (RFP). The MLCC's business is unique compared to other control states. The Commercial off the Shelf (COTS) products did not meet the MLCC's requirements and customizing them seemed like trying to fit a square peg in a round hole. The decision was finally made to build this application in-house. The project team was formed. All the IT projects in SOM follow the State of Michigan Project Management Methodology (PMM) which is consistent with industry standard best practices and relies on the Project Management Book of Knowledge (PMBOK) as its authoritative source. The PMM is a key component of the State Unified Information Technology Environment (SUITE).

It was decided to follow the agile approach since agile is all about collaboration, communication, and continuous quality improvement. This approach allowed the MLCC to be able to see the progress with frequent, smaller releases to the test environment and allow flexibility for the MLCC to request any changes. The team decided this was critical for the success of this project since this was a public-facing application accessible to more than 14,000 licensees having multiple sub accounts. The input from the MLCC, the ADAs and the retail groups were key to the success of the project.

Design & Technology

The Michigan Liquor ordering system (MILO) had to be designed to have multiple interfaces to other MLCC applications to obtain product master data and to verify the licensee's status. The licensee data resides in the Salesforce cloud. Licensees must have a valid status to be able to submit order online. MLCC has 3 Authorized Distributor Agents (ADA) that distributed the order to the licensees from their warehouse. The ADAs maintained the inventory information in their own databases. MILO had to be designed to interface with the ADA systems to be able to obtain real time inventory information for various products when the licensee submitted an order online.

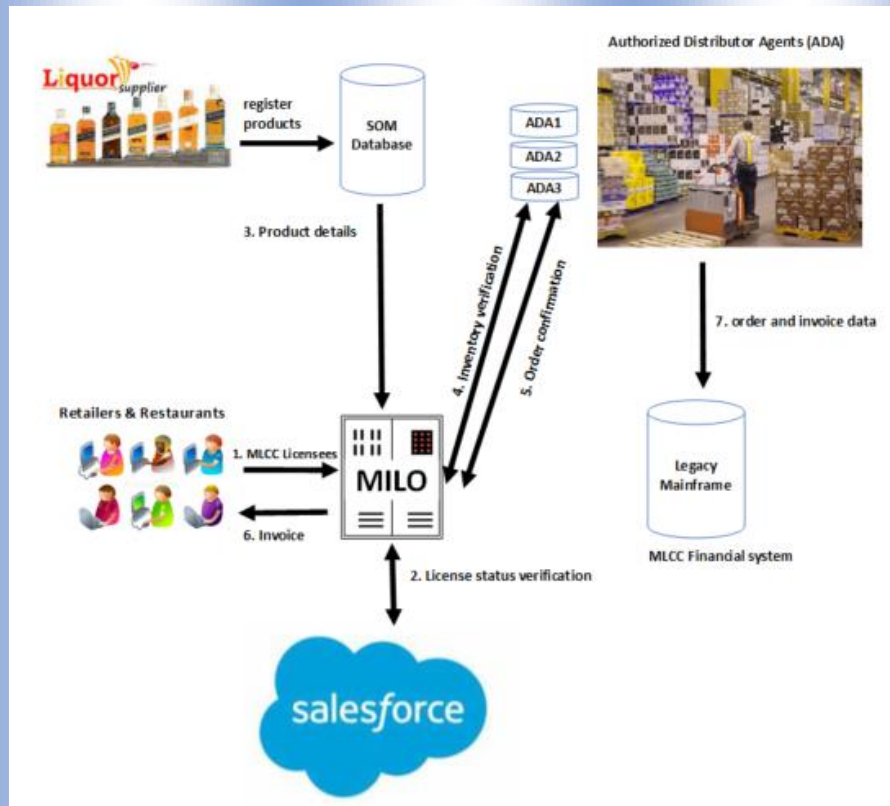
The project team decided on the technology stack as described below after considering all the above requirements.

The design approach was to keep the service layer separate to serve as a base platform for additional functionalities to build upon in the future when the MLCC's legacy financial system was modernized. Service layer was designed to hold the business logic. The service layer was also designed to interact with the database to store information related to product details, orders, etc. This was planned to be developed using Spring Boot framework.

To provide a better user interface, Angular framework was identified as the best choice. This approach allowed the separation of the front-end logic from the service layer enabling developers to work independently when modifying and testing the components.

The shopping cart had to be designed to allow the licensee to add items to the cart and be able to come back later to confirm the order. When the licensee confirmed their order, copy of the invoice along with the order details, delivery dates, and the confirmation was required to be emailed to the email account of the user.

Role based access allowed business owners to set up sub accounts for their staff and manage them without having to reach out to MLCC. MLCC staff also had user accounts set up with admin functions to be able to help the licensee in troubleshooting any issues when placing an order.



Implementation

The project used the Agile approach. MLCC prioritized the user stories for the sprints. Daily stand ups, Sprint planning and Sprint Retrospective meetings were conducted.

The industry best practices were followed in implementing security using multi-factor authentication (MFA) and encryption technology (TLS 1.2). When a new account is set up or a password reset is requested, the user gets a temporary token emailed to his/her email account in the system which is used to set up the permanent password.

User interfaces were developed using Angular which is a TypeScript-based open-source web application framework led by the Angular Team at Google. Oracle Database is used for storing the data and Spring boot provided the libraries for the service layer to interact with the database.

A utility batch was developed to migrate product information using Spring Boot batch to load product data seamlessly monthly from a legacy MLCC system. This will be dropped after the MLCC legacy modernization efforts were completed so the product data is housed in one system and there will be no need for duplication of product data.

The Service layer was developed using Spring Boot framework that contained the business logic and the interactions with the database to store information like products, orders, etc. is. It provided services to the Angular application and housed the logic to consume services from the ADAs to perform the Inventory checks real time and order placement.

MILO leverages Azure DevOps to perform Continuous Integration/Continuous Deployment (CI/CD) for its feature releases.

Quality Assurance (QA) and User Acceptance Tests (UAT) was completed for every sprint. ADA compliance was met and the application went through multiple sessions of load testing with the ADAs to ensure there were no performance issues.

Below is the application workflow:



Communications

Prior to launching MILO, the MLCC and DTMB put together a comprehensive, coordinated and strategic communications plan. The main goal was to educate and inform every individual licensee about MILO, regardless if they had an existing account in the legacy system or if they were a brand-new licensee. The MLCC provided advance notification to 11,000 licensees via the State’s GovDelivery direct email system, that included registration instructions prior to MILO going live – which was key to the seamless transition to the greatly modernized system.

Training videos and FAQs were put together and posted on the MLCC website to ease and facilitate the licensee’s transition into the new MILO system. The MLCC also set up demo sessions for the ADAs and several licensee, retail and educational groups the These collective efforts greatly paid off as the vast majority of licensees registered easily and quickly began using MILO.

[LARA - Online Spirits Ordering for Retailer Licensees \(\[michigan.gov\]\(https://www.michigan.gov\)\)](https://www.michigan.gov/lara/0,4570,7-293_173_174_175_176_177_178_179_180_181_182_183_184_185_186_187_188_189_190_191_192_193_194_195_196_197_198_199_200_201_202_203_204_205_206_207_208_209_210_211_212_213_214_215_216_217_218_219_220_221_222_223_224_225_226_227_228_229_230_231_232_233_234_235_236_237_238_239_240_241_242_243_244_245_246_247_248_249_250_251_252_253_254_255_256_257_258_259_260_261_262_263_264_265_266_267_268_269_270_271_272_273_274_275_276_277_278_279_280_281_282_283_284_285_286_287_288_289_290_291_292_293_294_295_296_297_298_299_300_301_302_303_304_305_306_307_308_309_310_311_312_313_314_315_316_317_318_319_320_321_322_323_324_325_326_327_328_329_330_331_332_333_334_335_336_337_338_339_340_341_342_343_344_345_346_347_348_349_350_351_352_353_354_355_356_357_358_359_360_361_362_363_364_365_366_367_368_369_370_371_372_373_374_375_376_377_378_379_380_381_382_383_384_385_386_387_388_389_390_391_392_393_394_395_396_397_398_399_400_401_402_403_404_405_406_407_408_409_410_411_412_413_414_415_416_417_418_419_420_421_422_423_424_425_426_427_428_429_430_431_432_433_434_435_436_437_438_439_440_441_442_443_444_445_446_447_448_449_450_451_452_453_454_455_456_457_458_459_460_461_462_463_464_465_466_467_468_469_470_471_472_473_474_475_476_477_478_479_480_481_482_483_484_485_486_487_488_489_490_491_492_493_494_495_496_497_498_499_500,000_501_502_503_504_505_506_507_508_509_510_511_512_513_514_515_516_517_518_519_520_521_522_523_524_525_526_527_528_529_530_531_532_533_534_535_536_537_538_539_540_541_542_543_544_545_546_547_548_549_550_551_552_553_554_555_556_557_558_559_560_561_562_563_564_565_566_567_568_569_570_571_572_573_574_575_576_577_578_579_580_581_582_583_584_585_586_587_588_589_590_591_592_593_594_595_596_597_598_599_600,000_601_602_603_604_605_606_607_608_609_610_611_612_613_614_615_616_617_618_619_620_621_622_623_624_625_626_627_628_629_630_631_632_633_634_635_636_637_638_639_640_641_642_643_644_645_646_647_648_649_650_651_652_653_654_655_656_657_658_659_660_661_662_663_664_665_666_667_668_669_670_671_672_673_674_675_676_677_678_679_680_681_682_683_684_685_686_687_688_689_690_691_692_693_694_695_696_697_698_699_700,000_701_702_703_704_705_706_707_708_709_710_711_712_713_714_715_716_717_718_719_720_721_722_723_724_725_726_727_728_729_730_731_732_733_734_735_736_737_738_739_740_741_742_743_744_745_746_747_748_749_750_751_752_753_754_755_756_757_758_759_760_761_762_763_764_765_766_767_768_769_770_771_772_773_774_775_776_777_778_779_780_781_782_783_784_785_786_787_788_789_790_791_792_793_794_795_796_797_798_799_800,000_801_802_803_804_805_806_807_808_809_810_811_812_813_814_815_816_817_818_819_820_821_822_823_824_825_826_827_828_829_830_831_832_833_834_835_836_837_838_839_840_841_842_843_844_845_846_847_848_849_850_851_852_853_854_855_856_857_858_859_860_861_862_863_864_865_866_867_868_869_870_871_872_873_874_875_876_877_878_879_880_881_882_883_884_885_886_887_888_889_890_891_892_893_894_895_896_897_898_899_900,000_901_902_903_904_905_906_907_908_909_910_911_912_913_914_915_916_917_918_919_920_921_922_923_924_925_926_927_928_929_930_931_932_933_934_935_936_937_938_939_940_941_942_943_944_945_946_947_948_949_950_951_952_953_954_955_956_957_958_959_960_961_962_963_964_965_966_967_968_969_970_971_972_973_974_975_976_977_978_979_980_981_982_983_984_985_986_987_988_989_990_991_992_993_994_995_996_997_998_999_1000,000)

Future Improvements Planned

Additional features are planned in the future for Phase 2 and 3 that will provide new capabilities such as:

- Allowing licensees to submit requests for price reduction online to move slow selling products off their shelves.
- Allowing licensees to make payments online for their order
- Digital advertising of liquor products by suppliers resulting in increased sales and revenue to the State.
- Allowing the public to view the MLCC product list

Impact

The MLCC had an extraordinary year, reporting a record of almost \$1.8 billion in sales of distilled spirits in FY 2020. Liquor sales skyrocketed during the COVID-19 pandemic as the MLCC realized a 17 percent increase over the previous fiscal year. [Article from msn.com](#) This is a huge revenue generating system for the State of Michigan. The launch of the MILO application could not have been timed any better to help licensees financially recover from the impact of the pandemic. The MLCC has received positive feedback from the ADAs and the retail businesses after the launch of the application.

Midwest Independent Retailers Association Retail Vice Chair (Markham Oil) Michael Mitchell was impressed with the MLCC implementing such a major change to a new system, especially during the COVID-19 pandemic.

“In a non-COVID time this new system would be a massive undertaking. The fact that the MLCC pulled this off during COVID is remarkable,” said Mitchell. “We have many issues every time we change a system or upgrade a program. The MLCC has done a great job of listening to the wants and needs of all of us. Change is never easy, but this was managed very well.”

Licensee Rishi Makkar, store manager at International Beverage in Grand Rapids, MI has already offered his recommendations and commented, “it’s so wonderful to have an administration and a development team that truly cares about the end-user experience and is willing to take input to further improve on the already cemented improvements. It’s nice to know that we are truly treated as partners instead of just a license number.”

The enhanced capabilities through MILO brings the MLCC’s liquor ordering system into the 21st century for retailers and will better meet their business needs. MILO also provides the MLCC with a platform to build on that will give the MLCC the ability to add other functions that will serve the State of Michigan and liquor licensees well into the future.

Below are references to published articles reporting feedback from the businesses after the launch.

- [Article from mibiz.com](#)
- [WJMN - UPMatters.com](#)
- [Moody on the Market](#)
- [WPBN \(upnorthlive.com\)](#)

Metrics

The number of online orders per month has increased significantly within the first 3 months since the launch in February 2021. MILO orders increased from 41,000 in February to over 55,000 orders in March and April. The total number of licensees registered as of March 2021 is 13,114.

