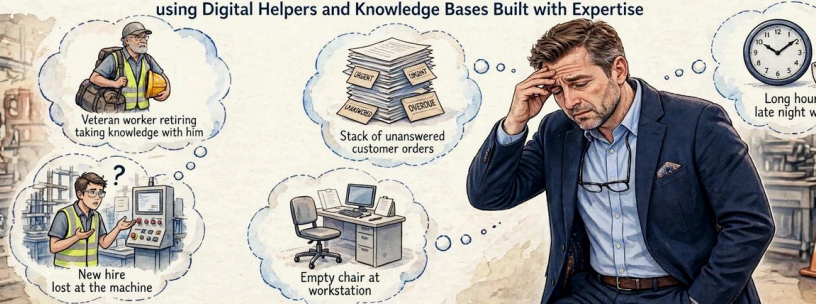




MKP: a complete business platform with tireless digital helpers and self-improving expert knowledge bases.

DRAFT — FOR REVIEW

DOS

DOOR OPENING SURFACE

One Register for Every Opening

A surface inside Max Business System that runs a hollow metal door, frame, and hardware job the way the trade runs it — opening by opening, from design to signed-off opening to a lifetime of service.

- **The problem in one line** — an opening lives in five places at once: the door schedule, the hardware set, the shop drawings, the keying schedule, and somebody's memory
- **Conflicts between those documents** are the trade's leading source of bid gaps and change orders
- **The idea** — the opening is the unit of work: door leaf, frame, hardware set, glazing and gasketing, wall condition, and electrified gear, designed, ordered, delivered, and inspected as one assembly
- **The opening number is the primary key** — the same number on the schedule, the factory mark, the packing list, the punch item, and the inspection record
- **One register** replaces the spreadsheets, the email threads, and the tribal knowledge
- **A fire rating holds only when every component is installed per its listing** — the register tracks the assembly, not just the parts
- **Eight subsurfaces, one per phase of the opening's life** — the build phases on pages 3–4; the service life rides the lifecycle, page 2
- **Hard gates in the system, not in somebody's head** — fabrication and keying cannot jump their approvals (page 3)
- **Hardware is half the opening** — families, grades, templates, and keying, specified per opening in the one register (pages 5–6)
- **Built on Odoo** — the business platform run by 28M users and 21,000 partners worldwide; one system of record under the whole job
- **Digital Helpers work from the register** — they propose, humans decide
- **Honest by design** — if the data is not there, the screen says so; nothing is made up

The Lifecycle — Six Phases, Then a Lifetime

Every opening travels the same road. Each phase ends at a **gate** — a condition the register checks, not a judgment call somebody makes under schedule pressure.

The six phases

- **1 · Design** — the architect's schedule, hardware groups, and code inputs are captured; product is selected to SDI level and model. **Gate:** drawings and manual issued for bid; every opening carries its full field set, or a flag that follows it
- **2 · Bid & Procurement** — takeoff by opening; the scope matrix names who supplies, installs, wires, tests, commissions, and warrants each component class. **Gate:** the package is awarded and every scope cell has a named owner — an unowned cell blocks the gate
- **3 · Submittals** — the DHI-format hardware schedule, shop drawings, product data, the keying schedule, and wiring diagrams for electrified openings. **Gate:** Approved or Approved as Noted, templates present, keying approved by the Owner — the two hard gates live here, and bite on hardware (page 6); a field conflict re-enters here as an RFI or change order, never an untracked fix
- **4 · Fabrication** — doors and frames prepped from templates, rated product labelled, everything marked by opening number. **Gate:** marked, labelled, and shipped by opening number — label numbers recorded on the opening, or it does not ship
- **5 · Site** — receive, store, set frames, grout, hang doors, terminate electrified gear, adjust, and protect. **Gate:** installed, adjusted, protected — a receiving record, an install record, and measured clearances on every opening, or an open field RFI
- **6 · Inspect & Close-Out** — punch by opening, the NFPA 80 acceptance test, AHJ inspection, and the documents and keys handed over. **Gate:** substantial completion — a rated opening is not complete without its acceptance test record

7 · In Service — the annual cycle

- **The annual NFPA 80 inspection cycle is scheduled automatically** from each opening's sign-off date
- **Every inspection is recorded on the opening** — date, inspector, result, deficiencies; records kept at least three years, acceptance records for the life of the installation
- **A lapsed inspection window shows as overdue on the opening**, in plain sight — never buried
- **Deficiencies never sit as free text** — each one becomes repair work against its opening, measured against the acceptance record from close-out

8 · Maintenance and Repair — the service book

- **About 40 percent of a door company's workload and revenue** — the recurring book of work on openings already installed
- **Inspection-driven and reactive work in one queue** — failed latching, closer faults, clearance drift, damaged seals, label problems; every call recorded against the opening number
- **The technician sees the opening's whole history before touching it** — listed hardware, label data, keying state, prior repairs
- **Rated openings take listed parts only** — a repair beyond what NFPA 80 allows is refused and routed to replacement or engineered handling; clearance and latching are re-verified after any closer or latch work
- **The service history accumulates for the opening's whole life** — the register becomes the building's door record

The Subsurfaces — Design, Bid, Submittals

1 · Design

- **Born from the model** — BIM and Revit intake is the primary channel: the Revit door schedule maps straight onto the opening's fields
- **The Revit door mark becomes the opening number** — a duplicate or missing mark is an intake error, surfaced, never silently renumbered
- **Family and type parameters** set door type and frame type; the host wall sets wall condition, frame profile, and anchor family
- **Product selection with the rules on** — SDI level and model, door and frame gauges, core, galvanized or prime, thermal break, glazing and louver preps
- **One definition of handing** — SDI-111D's — used by the schedule, the shop drawings, and the order alike
- **Code checks seeded here** — rating and label type, the accessibility set, and the jurisdiction switch for the job
- **A rating conflict is caught at entry** — a 90-minute rating against a full glass lite cannot leave Design clean; the flag follows the opening
- **Manual and spreadsheet intake remain** for jobs with no model — same fields, same checks
- **Produces the door, frame, and hardware schedule in SDI-111D form** — generated from the register, never re-keyed

2 · Bid & Procurement

- **Takeoff opening by opening** — the design field set confirmed line by line, not lumped into a lump sum
- **The scope matrix makes the Division 8 / 26 / 28 boundary explicit** — who supplies, installs, wires, tests, commissions, and warrants each component class
- **Scope gaps flag themselves at takeoff** — a frame without an anchor set for its wall; a rated opening without rated glazing, seals, or closer; an electrified set with no prep and no power owner
- **Substitutions carry their evidence** — on a rated, accessible, or electrified opening, a substitute must preserve listing, compatibility, and compliance, or it is refused
- **Long-lead work is flagged early** — custom frames, rated assemblies, specialty and electrified hardware
- **Quote and bill of materials generated from the register** and the catalog variants — one BoM, applied on variants

3 · Submittals — the control gate

- **The DHI-format hardware schedule** — vertical, door by door, in the trade's set order: hang, secure, control, protect
- **Shop drawings, product data, the keying schedule** — and, for electrified openings, wiring diagrams and operation narratives
- **Every templated hardware item carries its template reference** — function, prep, reinforcement, and template checked together
- **HARD GATE 1** — no fabrication release until the hardware schedule and shop drawings stand Approved or Approved as Noted with the notes incorporated, and a template reference is present for every templated item; Revise and Resubmit blocks release absolutely
- **HARD GATE 2** — no permanent cylinders or cores are ordered before the keying schedule carries the Owner's approval, recorded on the opening; construction cores are unaffected
- **Review cycles are timed, not guessed** — elapsed cycle time is tracked on every submission and resubmission
- **A hardware-set change after release re-triggers prep validation** before any further fabrication

The Subsurfaces — Fabrication, Site, Close-Out

4 · Fabrication

- **Build exactly what Submittals released** — the released shop drawings and template sheet are the only build basis
- **Factory preps are for templated mortise hardware only**, per the approved hardware schedule; surface-applied and non-templated items are field-prepped, and the work order says so
- **Template presence is re-verified at work-order release** — a template withdrawn after release stops the work order
- **Rated product bears its listing label**, with factory-inspection provenance recorded
- **Door and frame label numbers are recorded on the opening** before it ships
- **Packing is by opening number** — the packing list, the factory mark, and the register agree

5 · Site

- **Receiving is recorded per opening**, inside the carrier's claim window — damage notes go on the receiving sheet, not in a text message
- **Storage is a checklist, not a hope** — upright, dry, limited stacks, off the ground, no sealed wrap; primer topcoated on schedule
- **Frames set and anchored to the wall condition on the register**; grout placed to rule, preps protected
- **Tolerances and clearances are measured and recorded** — squareness, alignment, twist, and plumb in the ±1/16 in. class; head and jamb clearances 1/8 in. ±1/16 in.
- **Fire-door clearances held to the fire set** — under-door gap no more than 3/4 in., tighter where the door bottom sits high above the floor
- **Closers adjusted against the jurisdiction's accessibility set** — opening force and hardware height checked, not assumed
- **Electrified work is commissioned per device** — who mounted, who wired, who programmed, who tested, recorded against the scope matrix
- **Field modifications to rated openings are recorded** — and must comply with NFPA 80

6 · Inspect & Close-Out

- **Punch is by opening number** — swing, latching, closer operation, exit devices, thresholds and seals, fasteners, finish, labels, electrified coordination
- **Every rated opening gets its NFPA 80 acceptance test** — date, tester, result, deficiencies — retained for the life of the installation
- **AHJ inspections recorded on the opening**, not in a binder nobody can find
- **A rated opening cannot sign off without its acceptance test record** — the surface will not let it
- **Close-out pack generated from the register** — final hardware and keying schedules, as-installed wiring diagrams, O&M, warranties, training record, as-builts
- **Keys, cores, and credentials delivered** against a transmittal record
- **A missing close-out deliverable shows as a named gap** — never a silent absence

Hardware — Half the Opening

An opening is **door, frame, and hardware**. The leaf and frame are fabricated once; the hardware is specified, templated, keyed, adjusted, and serviced for the life of the building. So in DOS the hardware set is part of the one register entry — **scheduled per opening**, never a separate schedule lost in an email thread.

One set per opening, in the register

- **Every opening carries its hardware set** — each item specified as A156 standard + grade + BHMA finish code, in the trade's set order: hang, secure, control, protect
- **The set is born in Design** with the door and frame, priced in Bid & Procurement, released through Submittals, and serviced from the same record — one set, one history
- **A hardware-set change after fabrication release re-triggers prep validation** — the set and the factory preps can never quietly disagree

The families, as BHMA organizes them

- **Hanging** — butts and hinges (A156.1), self-closing hinges and pivots (A156.17), continuous hinges (A156.26): what the whole assembly hangs on, cycle-tested at Grade 1 to 2.5 million cycles
- **Locking** — bored (A156.2), mortise (A156.13), and interconnected (A156.12) locks by F-number function, with auxiliary and multipoint locks (A156.36 / .37) where the opening demands them
- **Cylinders and keying** — cylinders and input devices (A156.5), master keying practice (A156.28), high-security cylinders (A156.30): the key system is hardware, and it is scheduled like hardware
- **Exit and egress** — exit devices (A156.3), exit locks and alarms (A156.29), single-motion egress: on a rated opening, this family carries the life-safety duty
- **Control** — closers and pivots (A156.4), overhead stops and holders (A156.8), release devices (A156.15): the hardware that makes the opening behave, adjusted against the accessibility set at the site gate
- **Electrified locking and access control** — electrified locking devices (A156.25), electric strikes (A156.31), electromagnetic locks (A156.23), delayed egress (A156.24): specified with power, wiring, and an operation narrative — or not at all
- **Operators and integrated assemblies** — power-operated and low-energy doors (A156.10 / .19) and integrated door opening assemblies (A156.32 / .43): the opening bought, wired, and warranted as one assembly
- **Trim, thresholds, and gasketing** — architectural trim (A156.6), thresholds (A156.21), gasketing (A156.22), auxiliary hardware (A156.16): the parts that carry the smoke, sound, and weather performance of the assembly

Hardware Rules — Grades, Templates, Keying

Hardware is where the register's rules bite hardest, because **hardware is where the approvals live** — grades proven by test, preps proven by template, cores proven by the Owner's keying approval.

Grades and certification

- **BHMA grades are performance levels inside each A156 standard** — Grade 1 is the benchmark: a million cycles on a mortise lock, two million on a closer, 40,000 on a cylinder; the register carries standard + grade on every hardware item
- **A grade is never a bare quality label** — benchmarks are not comparable across standards, so the surface always cites the standard with the grade
- **Certified product is proven in BHMA's Certified Products Directory** — a live listing, checked at the source when a listed product is claimed; the rule library states the rule, it does not hold the listings
- **On a rated opening, BHMA certification is not enough** — the hardware also carries its fire listing, or the assembly's rating does not hold

Templates and preps — wired to Gate 1 (HM-R035)

- **A156.115** is the template and prep standard for steel doors and frames; **A156.7** carries the template hinge dimensions
- **No fabrication release until every templated item on the opening carries its template reference** — function, prep, reinforcement, and template checked together (Hard Gate 1, page 3)
- **Factory preps are for templated mortise hardware only**; surface-applied and non-templated items are field-prepped, and the work order says so
- **Stated plainly:** prep dimensional verification depends on the licensed A156.115 standard drawings, which are not reproduced in the library — the register proves the template reference is present and correct, and dimensions are verified against the standard in hand

Keying — wired to Gate 2 (HM-R038)

- **Keying is specified to A156.28 recommended practice** — keying conference, key-set symbols, master levels — and the keying schedule is generated per opening
- **No permanent cylinders or cores are ordered before the keying schedule carries the Owner's approval**, recorded on the opening (Hard Gate 2, page 3); construction cores are unaffected
- **High-security cylinders (A156.30) are specified by level** — key control, destructive resistance, surreptitious entry — on the keying schedule, not by brand name

Finishes — a specified attribute of every set (HM-R033)

- **Every hardware item carries its A156.18 finish code** — 630 satin stainless, 626 or 652 satin chrome by base material, 600 primed for painting — selected in Design, carried in the bid, and matched again on replacement
- **The code is matched to the base material**, and US finish designations are treated as nearest equivalents, never identities

The citations ride on the work

- **Hardware rules in the surface cite HM-R031–HM-R045** — the BHMA set in the rule library, ingested from the BHMA reference of record
- **A rule the library cannot state with a citation is shown as unverified** — never silently applied

Standards and Rules — The Authorities on the Work

The surface does not invent its rules. **Each rule answers to a governing body**, and the citation rides on the work where anyone can check it.

BHMA — the governing organization for door hardware

- **The ANSI/BHMA A156 series** governs the hardware set — its families, grades, templates, and keying get their own treatment on pages 5–6
- **The BHMA reference of record sits in the rule library as HM-R031–HM-R045** — the citation root for every hardware rule the surface enforces

SDI — the steel door and frame itself

- **ANSI/SDI A250.8** — levels, models, and gauges: Levels 1–4; full flush, seamless, and stile and rail
- **A250.6** — hardware reinforcing; **A250.10** — prime paint
- **The SDI-111 series** — the schedule forms and the one definition of handing
- **HMMA practice manuals** — guide specification, receipt, storage, and installation, and fire- and smoke-rated products

Fire and life safety — NFPA

- **NFPA 80** — fire doors: acceptance testing on installation, inspection at least annually, records kept
- **NFPA 101** — the life-safety code behind egress and positive latching
- **NFPA 105** — smoke door assemblies, installed and maintained to limit leakage
- **A fire rating is the assembly's, not the leaf's** — every component installed per its listing, or the rating does not hold

DHI — the formats the trade reads

- **The hardware schedule follows DHI's sequence and format** — a schedule out of order is rejectable in the trade, so the generated document is in order by construction
- **Keying schedules in the trade's form** — symbols tied to openings and hardware sets

The HM-R rule library

- **The rules are already codified** — HM-R000 through HM-R030 carry the hollow-metal practice set, and the BHMA hardware set HM-R031–HM-R045 now rides with them
- **Every rule a subsurface enforces cites its article** — the article is the rule's statement of record, and the screen shows the citation
- **New rules are authored as articles and verified by a practitioner** before any subsurface enforces them
- **A rule that cannot be stated with a citation is shown as unverified** — never silently applied

The Platform Under It — and What Changes

Built on Max Business System

- **DOS is a surface inside MKP's Max Business System** — its home is SELL & SERVE, its delivery and service subsurfaces sit in RUN OPERATIONS — one surface, one register, never split
- **Odoo is the system of record**; everything lives on native models — projects, sales orders and bills of materials, work orders, documents, quality checks, and the maintenance machinery
- **The one disciplined extension** — the platform has no native opening model, so the Opening is a single thin extension object linking them; money, manufacturing, and service work are never duplicated onto it
- **The register reads the live mirror** — never stale copies; where data has not arrived, the subsurface shows the gap, and the gaps become the work list
- **Maintenance and Repair runs on the platform's native maintenance machinery** — the signed-off opening is registered equipment; service runs as requests and work orders, parts from inventory
- **Digital Helpers propose. Humans decide.** — helpers answer from the register and the rule library — ask which openings are held off fabrication, and why
- **Tireless Digital Helpers**, working from a **Self-Improving Expert Knowledge Base** — the HM-R library grows by verified articles, and the helpers answer from it
- **Prewired, not projects** — subsurfaces turn on by configuration; a company without a service operation toggles Maintenance and Repair off, and the register is unaffected

What changes for the company

- **Bid day** — scope gaps flag at takeoff instead of surfacing later as change orders and arguments
- **The shop** — fabrication builds only from approved submittals with templates present; the wrong-hand and wrong-prep classes are designed out
- **The field** — receiving, clearances, and commissioning recorded per opening: shorter punch, evidenced disputes
- **Compliance** — acceptance and annual inspection records exist, are findable, and are kept as the rules require
- **Service** — the 40 percent becomes a managed book: every installed opening carries its history, and its next inspection is already scheduled

The rollout shape

- **Spec first** — the specification and the build plan are the record; building follows approved text
- **A synthetic demo comes first** — one fictional openings project, gates visibly working, clearly labeled synthetic
- **Pilot on one project** — one real job carried through the phases on the register
- **Review before any prospect sees it** — the workflow is walked end to end by a practitioner first
- **Subsurfaces adopt phase by phase** — turn each one on as the company is ready to work in it
- **Publish on go** — production and client links move only on the owner's word

Business Systems
with Digital Helpers
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